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ABSTRACT

A national survey of desktop computing in higher education was conducted in spring and summer 1993 at over 2500 institutions. Data were responses from public and private research universities, public and private four-year colleges and community colleges. Respondents (N=1011) were individuals specifically responsible for the operation and future direction of academic computing on their campuses. Among key findings were: (1) institutions appear to want software and information technology resources to support instruction primarily software developed by outside sources; (2) nearly half of institutions provide some assistance to help faculty develop technology-based instructional resources but only 15 percent reward or provide incentive to faculty who do develop software; (3) the proportion of campuses reporting budget cuts in computing activities continues to decline from 31 percent in 1992 and 36 percent in 1991 to 28 percent in 1993; (4) there has been a clear shift to '486-based systems in the IBM/compatible domain; (5) expanding campus computing networks remains a top institutional priority; and (6) the proportion of students and faculty who own computers continues to rise slowly across all sectors. Also included are the survey data and appendixes detailing study methodology, the survey form, and a list of participating institutions. (JB)

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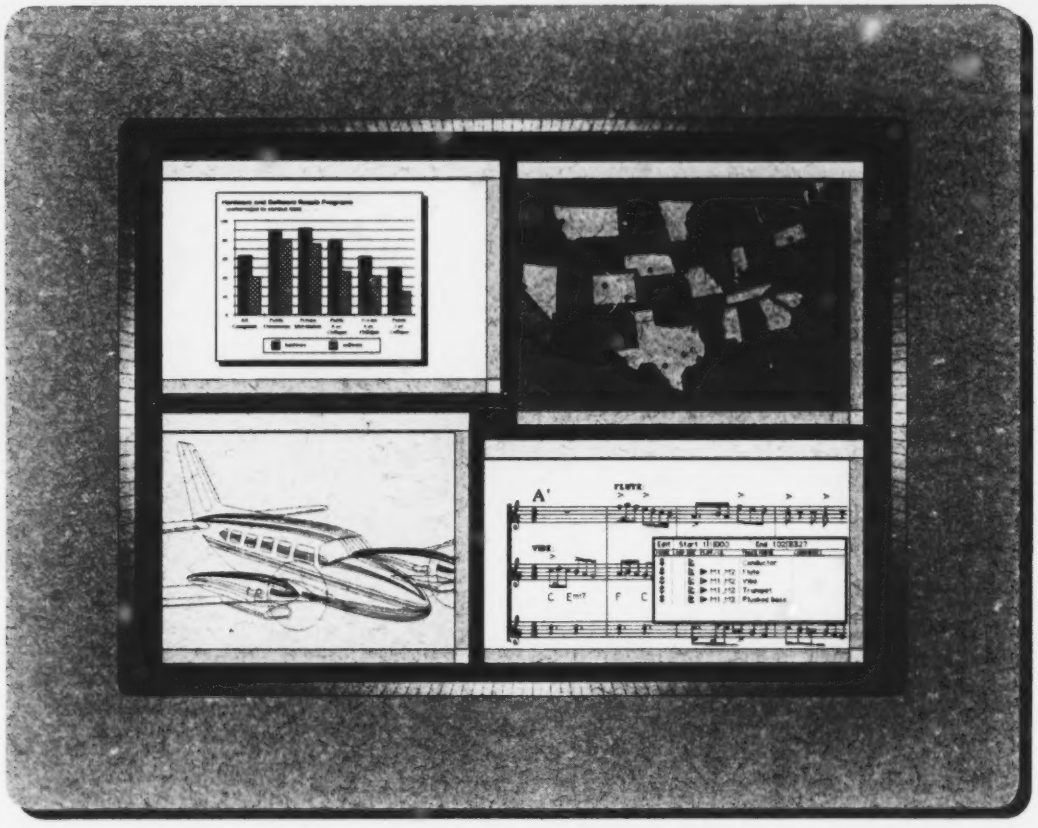
CAMPUS COMPUTING 1993

The USC National Survey of Desktop Computing in Higher Education



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CAMPUS COMPUTING 1993

The USC National Survey of Desktop Computing in Higher Education

Kenneth C. Green & Skip Eastman

FEBRUARY, 1994

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The Technology, Teaching, and Scholarship Project (TTSP), begun at USC in 1990, conducts research about the use of information technology to support instruction and scholarship. The project's national research studies draw on qualitative and quantitative data to help inform campus administrators, faculty, and others interested in and concerned about the use of information technology in American colleges and universities. TTSP activities are supported by foundation grants and corporate sponsors.

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CAMPUS COMPUTING 1993

The USC National Survey of Desktop Computing in Higher Education

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CAMPUS COMPUTING 1993

The USC National Survey of Desktop Computing in Higher Education

The 1993 National Survey of Desktop Computing in Higher Education was conducted during Spring and Summer 1993 as part of the University of Southern California's Technology, Teaching and Scholarship Project (TTSP).[1] The data presented in this report are based on the responses of more than 1,000 two- and four-year colleges across the United States. The survey, now in its fourth year, is the largest continuing study of the use of information technology in higher education.

The survey results presented in this report summarize the data from public and private universities, public and private four-year colleges, and from community colleges (i.e., public two-year institutions).[2] The survey respondents were individuals specifically responsible for and knowledgeable about the current direction of academic computing on their campuses.[3] Surveys were mailed in Spring 1993 to the senior academic computing officer at more than 2,500 colleges and universities across the United States. Where it was not possible to identify a specific individual with an academic computing title, the survey was sent to the senior academic officer. (Additional information about the survey methodology is provided in Appendix A.)

Support for Instructional Technology Development

The 1993 survey data reveal that colleges and universities clearly want software, courseware, and other kinds of information technology resources to support instruction. However, academic computing directors view software development efforts as less important to teaching and instruction than faculty efforts to use information technology resources provided from other sources. According to the 1993 survey, the mean score for the importance of courseware/software development is 4.2 (seven point scale; not important/very important), compared to 5.8 for "using software in classes," 5.7 for "using software as supplement for classes," and 5.3 for "using Internet resources for instruction." (Figure 1.)

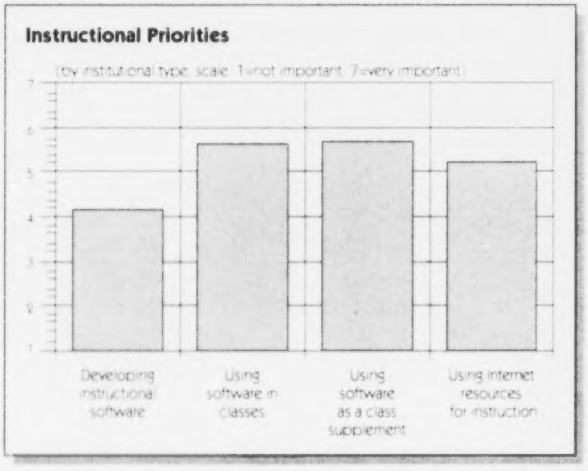

Figure 1

Almost half the colleges and universities across the United States report that they provide some assistance to help faculty develop technology-based instructional resources. However, the proportion of campuses supporting instructional technology projects has grown little over the four years of the survey. Equally important is that comparatively few campuses, just 15 percent, actually reward or provide incentives to faculty who do develop software or courseware. Also significant in this context is that the percentage of institutions that do reward faculty efforts has shown virtually no change since 1990 (see Figure 2).

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[1] The 1993 USC National Survey of Desktop Computing in Higher Education was supported, in part, by grants from the following corporate sponsors: Apple Computer, Cisco Systems, Follett Corp., Hewlett-Packard, IBM, John Wiley and Sons, Lotus Development Corp., McGraw-Hill, and SPSS.

[2] Several hundred private two-year colleges were including in the survey mailing. However, the low response rate from this group could not be viewed as being representative of the larger population of some 250 private two-year colleges in the United States.

[3] The USC survey focuses on academic computing, i.e., the use of computing and information technology to support and enhance instruction and scholarship. The survey does not address the use of desktop computers in academic administration (e.g., budgeting, registration, financial management, student records).

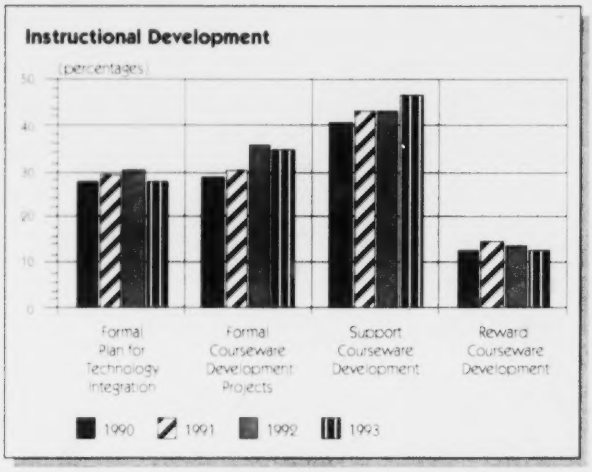

Figure 2

These data suggest that most faculty will have to look off-campus for technology-based instructional resources. Although college and university faculty clearly want technology-based resources for their classes, institutional support and rewards for faculty efforts to develop and experiment with information technology for the classroom have not grown in recent years.

The 1993 survey data also indicate that while the demand for instructional technology resources is strong, campuses are not expanding their investments to create these materials. Certainly the current financial problems affecting many institutions explains part of the slow growth in these investments. Additionally, there is less corporate underwriting for these efforts due to the growing competitive pressures and declining profit margins among technology vendors; in past years corporations such as Apple and IBM often provided significant funds to help support campus efforts.

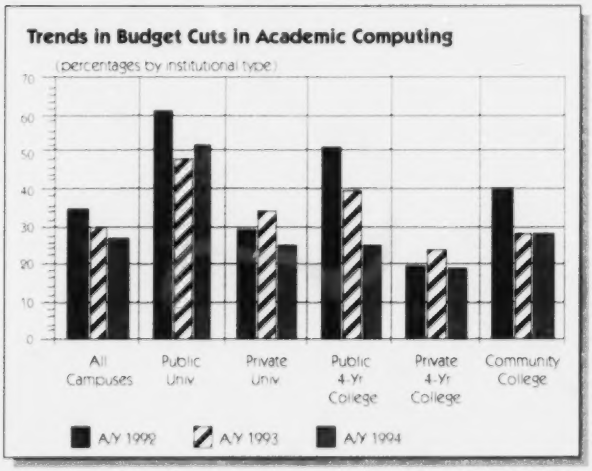

Figure 3

Campuses have also learned much from their early and not always successful investments in courseware development: two clear lessons from the initial efforts are that (a) courseware development is expensive and (b) successful development it is often best done by interdisciplinary teams.

Given this strong demand for resources, book publishers and others in the publishing industry are likely to increase their investments in this area, *if* they can find a way to make money on their investments. Although courseware and other kinds of instructional technology resources are a natural extension for textbook publishers, many publishing executives are concerned about the costs of development, content and copyright issues, and technological obsolescence, all of which pose major challenges for companies interested in providing digital content and instructional materials for the higher education market.

Budget Cuts

According to the 1993 survey, budget cuts continue to be a fact of life in academic computing. However, the proportion of campuses reporting budget cuts in computing activities continues to decline, down to 28 percent in 1993, from 31 percent in 1992 and 36 percent in 1991. As in previous years, more public universities report budget cuts than institutions in other sectors: fully half (53 percent) of the public research universities reported cuts in academic computing this year, down from the peak of over three-fifths (62 percent) in the 1991/92 academic year. (Figure 3)

Mid-year budget cuts are less common this year than last. In the 1992-93 academic year, 15 percent of the campuses in the USC survey experienced mid-year budget cuts, down from 25 percent the previous year. The size of the mid-year cuts also declined this past year, from 15 percent in 1991-92 to 13 percent in 1992-93. Public four-year colleges reported the highest average mid-year cuts at 16 percent, compared to 5 percent for both public and private research universities, 14 percent for private four-year colleges, and 12 percent for community colleges. (Figure 4)

These annual budget reductions reflect the continuing financial problems affecting higher education. The 1993 survey data document the way that computing operations in public research universities and four-year colleges have been particularly hard hit by the double burden of both mid-year reductions and good-sized annual budget cuts. The data also suggest that purchasing decisions about desktop systems are becoming increasingly decentralized, migrating from campus computing centers into academic departments.

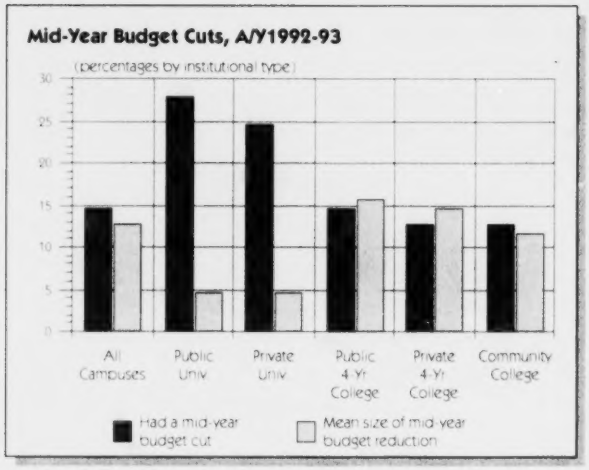

Figure 4

At many institutions the primary mission of academic computing is shifting from managing (large) computers to managing the campus computing network. In this context, academic and administrative units, rather than the central campus computing center, are gaining growing (if still somewhat informal) control over major purchasing decisions and also more budget responsibility for desktop equipment (computers and workstations) and associated software purchases.

As in past years most campuses continue to buy equipment without an institutional plan for amortizing the cost of computers and technology resources. Almost half of the institutions nationwide deal with computer purchases as a one-time budget allocation (44 percent, down slightly from the peak of 49 percent in the 1990 survey). (Figure 5.) Approximately one-third (36 percent, up from 33 percent in 1990) report that they are developing a budget plan to "acquire and retire" computers. And this year almost one-fifth (19 percent) of the campuses report that they have a formal budget plan for computer equipment, up from 16 percent four years ago.

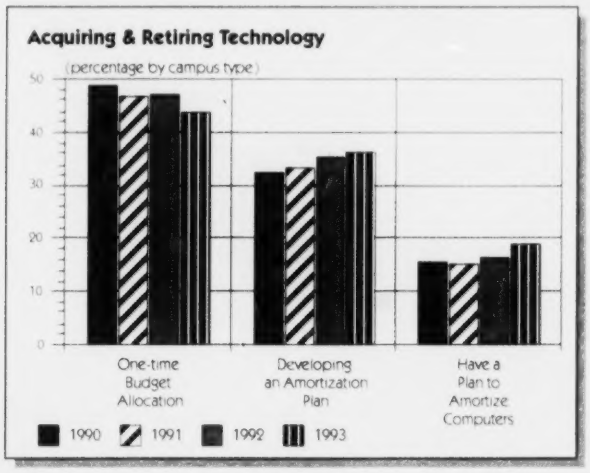

Figure 5

Hardware Preferences

The 1993 survey reveals the clear shift to '486-based systems in the IBM/compatible domain. Last year only 30 percent of the campuses responding to the survey recommended '486 systems, while fully half recommended '386-based IBM/compatible computers. In contrast fully half (50 percent) recommend '486-based systems this year while only one-fourth (26 percent) encourage students and faculty to buy '386-based systems. (Figure 6.)

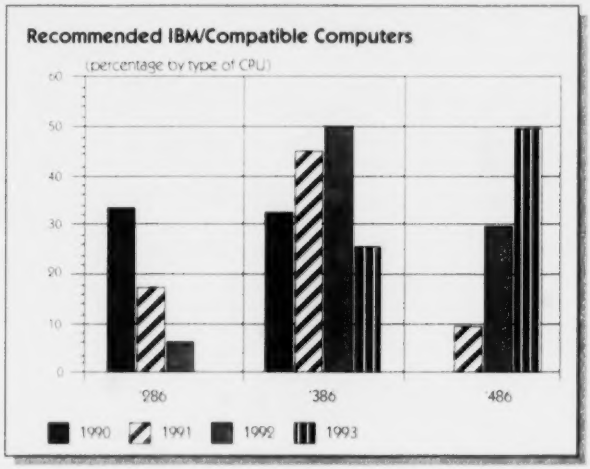

Figure 6

Campus respondents give a somewhat luke-warm response the new microprocessors that will be at the heart of the next generation of desktop systems. The Intel '486-and Motorola chips that are the foundation of the current generation of IBM/compatible and Macintosh systems are viewed as "very important" to future computing activities by campuses in all sectors. However, respondents are less enthusiastic about the Pentium, PowerPC, and Alpha microprocessors that Intel, IBM, Apple, Motorola, and Digital hope will provide the core-CPU technology for the next generation of desktop systems. (Figure 7.)

The higher education market, which has always been very price sensitive, seems to lag the corporate market by about one year. Consequently, campus interest in these new chips will increase significantly during the next twelve months: vendors will announce more products based on these new chips, software developers tune their products to tap into the new computing power these chips provide, and increased competition at the high end of the market will push

down the price of the hardware to levels comparable to '486-based IBM/compatible systems.

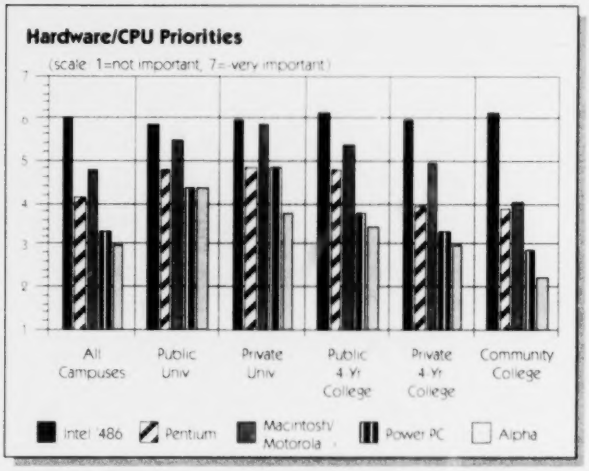

Figure 7

Campus Networks

According to the 1993 survey data, expanding campus networks remains the top strategic priority for institutions in all sectors (scale score of 6.3, up from 6.2 in 1992 and 6.1 in 1991). Networking issues rank highest in research universities, although the gap has narrowed across institutional segments in the past two years. Indeed, nearly three-fourths (73 percent) of the respondents indicate that networking issues are "more important this year than last," up from 69 percent in 1992.

Almost two-thirds (63 percent) of the institutions in the survey have a campus network backbone, up from 58 percent in 1992. This ranges from high of 97 percent in private research universities to a low of 55 percent in community colleges. Fiber is the most common medium for the backbone: nearly three-fourths of the public and private universities report that fiber as the backbone of their campus network, compared to just over half (55 percent) in public four-year colleges, about two-fifths (38 percent) in private four-year colleges, and less than a third (27 percent) in community colleges.

Over two-thirds (69 percent) of the campuses report either Bitnet or Internet access, up from 55 percent in 1992. Additionally 14 percent report a campus Gopher, although Gopher activity is really concentrated in research universities (67 percent for public research universities and 44 percent for private research universities).

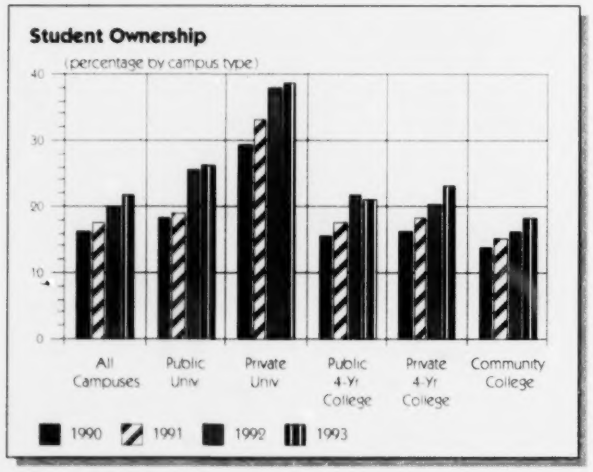

Figure 8

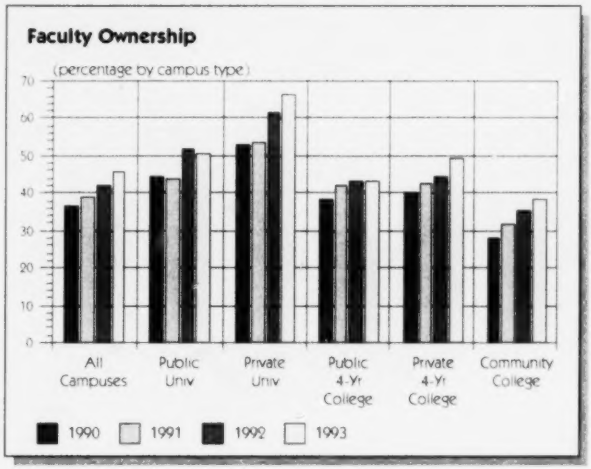

Figure 9

Student and Faculty Ownership

The proportion of students and faculty who own computers continues to rise slowly but steadily across all sectors. The percentage of students who own computers has risen by one-third over the past four years, to 22 percent in 1993, up from 16 percent in 1990. Similarly, faculty ownership has grown by one-fourth over the same period, rising to 46 percent in 1993, up from 37 percent in 1990. Private research universities show the highest proportion of both students and faculty who own computers: 39 percent for students and 67 percent for faculty. (Figure 8 and 9.)

The 1993 USC Survey of Desktop Computing is one component of USC's Technology, Teaching, and Scholarship Project (TTSP). The 1993 survey data are based on the responses from 1011 two- and four-year public and private colleges and universities across the United States. ❑

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CAMPUS COMPUTING 1993

The USC National Survey of Desktop Computing in Higher Education

Survey Data

GENERAL CAMPUS POLICIES ABOUT DESKTOP COMPUTING	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Do you have formal policy on computers:						
for curriculum utilization?	25.9	26.2	25.0	24.5	24.0	28.1
for undergraduates?	26.4	26.2	25.0	29.6	25.8	25.7
for graduate students?	6.8	15.4	16.7	13.2	7.6	.8
Do you have a computer instruction or computer competency requirement?	30.6	24.6	13.9	29.6	38.1	26.8
Do you have formal policy on confidentiality of computer data?	57.2	69.2	63.9	68.6	54.0	52.5
Do you have formal policy regarding development of software by faculty and staff	19.4	26.2	38.9	23.3	10.0	23.5
Micros required/strongly recommended*						
None	85.2	73.8	58.3	81.8	84.2	92.3
Specific disciplines	8.3	16.9	19.4	10.7	7.6	5.2
Individual units	1.1	4.6	2.8	.6	1.2	.5
All students	5.3	7.7	25.0	5.7	6.5	1.6
O/S recommended/supported*						
Apple II	26.1	18.5	8.3	32.7	28.7	23.8
Macintosh	70.6	87.7	88.9	86.8	72.4	57.1
UNIX	45.9	84.6	80.6	58.5	48.7	27.6
MS-DOS	93.3	95.4	97.2	94.3	93.3	92.1
Windows	80.2	86.2	91.7	81.8	76.5	80.9
OS/2	16.8	36.9	13.9	20.1	12.0	16.4
Solaris	5.9	30.8	16.7	6.9	5.0	.8
NeXTStep	4.7	10.8	11.1	8.2	5.9	.3
None recommended	5.1	3.1	5.6	6.3	5.3	4.6
Are there recommended brands*						
for students?	26.4	23.1	50.0	26.4	40.5	11.5
for faculty?	41.8	32.3	52.8	40.9	49.6	35.5
for admin./staff?	49.5	36.9	55.6	48.4	58.4	43.4

Percentages by Campus Category
(*Columns may total more than 100% since responses were not exclusive)

GENERAL CAMPUS POLICIES ABOUT DESKTOP COMPUTING	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
What desktop computers recommended*						
Macintosh Classic	13.5	13.8	22.2	15.1	17.0	8.7
Macintosh LC	21.9	27.7	33.3	27.0	30.2	9.8
Macintosh II/Centris	22.4	33.8	41.7	28.3	26.1	12.6
Macintosh Quadra	13.3	27.7	44.4	17.6	12.9	6.3
Macintosh PowerBook	14.1	27.7	41.7	20.8	15.0	5.2
Any Macintosh	35.4	38.5	55.6	42.8	43.4	22.1
IBM PS/2 Systems	13.4	18.5	22.2	8.8	12.0	15.0
'386/'386SX systems	26.2	26.2	38.9	21.4	28.7	24.6
'486/'486SX systems	50.2	40.0	55.6	55.3	55.7	44.0
Pentium	3.3	6.2	8.3	5.0	2.1	2.7
Any PC-compatible	57.1	44.6	63.9	58.5	63.3	52.2
What workstations are recommended*						
DEC	8.5	24.6	19.4	13.8	7.6	3.0
HP	4.6	9.2	16.7	5.7	3.5	3.0
IBM	6.6	18.5	27.8	8.2	4.4	3.8
Sun	8.4	26.2	41.7	10.7	7.9	1.4
Any Workstation	19.1	36.9	50.0	28.3	18.5	9.6

Percentages by Campus Category
(*Columns may total more than 100% since responses were not exclusive)

CURRENT MICROCOMPUTER AND DESKTOP COMPUTER FACILITIES	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Total number of desktop computers used on your campus today.....	1231.7	6541.6	4970.7	1337.6	484.5	568.9
Students per all desktop computers currently used on campus (Enrollment divided by reported total).....	11.2	8.5	2.8	8.0	7.7	17.4
Students per institutionally-owned desktop computer or workstation (Enrollment divided by number of desktop computers).....	13.7	10.0	4.3	14.6	10.6	18.2
Total number of computer labs, clusters and classrooms on campus this term?....	30.4	58.0	55.7	31.8	18.6	33.5
Total number of microcomputers in all the labs?.....	273.1	804.2	287.1	378.8	105.1	282.2
Total number of Unix workstations in all the labs?.....	45.9	123.3	83.6	42.6	17.9	29.7
Students per institutionally-owned computers available in labs or clusters (Enrollment divided by lab totals).....	25.8	30.0	28.8	27.7	21.8	27.7
Ratio of lab desktop computers to total institutionally-owned desktop computers	.5	.3	.2	.4	.5	.7

Means by Campus Category

CURRENT MICROCOMPUTER AND DESKTOP COMPUTER FACILITIES	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Proportion of students who have or own computers?	22.0	25.5	41.4	21.8	22.9	18.3
Proportion of faculty who have or own computers?	45.4	50.9	67.4	43.8	49.6	38.7
Proportion of administrators who have or own computers?	40.7	42.9	58.2	35.3	41.6	40.0
Est. desktop units purchased 1992-93:						
by students	166.1	533.9	393.0	181.0	63.6	160.7
by faculty	43.1	207.1	133.3	46.5	19.7	23.9
by admin	35.2	181.0	113.3	36.4	16.7	18.2
by labs	85.2	217.7	82.7	94.1	33.4	106.8
Est. desktop units purchased 1993-94:						
by students	190.7	528.8	468.2	184.4	85.6	202.7
by faculty	47.4	219.0	145.5	46.2	23.2	29.5
by admin	35.7	166.5	128.0	32.3	18.6	21.1
by labs	84.3	227.4	90.2	93.6	41.7	94.5

Means by Campus Category

CURRENT MICROCOMPUTER AND DESKTOP COMPUTER FACILITIES	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
No specific lab charge to students to use campus computer labs.....	63.8	58.5	77.8	67.3	66.9	59.0
Specific charge for use of labs?:						
included in student fees.....	17.6	23.1	8.3	26.4	15.2	15.8
included in course fees.....	18.1	21.5	5.6	10.1	15.2	24.9
hourly rates.....	.6	1.5	.0	.0	.3	1.1
printing.....	6.0	21.5	13.9	3.8	7.3	2.2

Percentages by Campus Category

10

HARDWARE/SOFTWARE ACQUISITION POLICIES AND PROCEDURES	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Does your campus have a special resale agreement with hardware vendors?						
No resale program	40.3	16.9	.0	25.9	37.8	57.0
No but sell computers on-campus	1.1	.0	.0	1.9	.9	1.4
Campus bookstore	20.6	38.5	25.0	32.9	13.6	18.1
Campus center	22.8	33.8	66.7	20.3	32.7	8.5
Off-campus dealer	15.2	10.8	8.3	19.0	15.0	15.1
Are computer buyers required to purchase bundled software?	6.3	1.5	19.4	7.5	10.3	1.6
Are computer buyers encouraged to purchase software?	32.6	44.6	75.0	40.9	39.3	16.4
Does your campus have a special resale agreement with software vendors?						
No resale program	50.2	10.9	2.9	39.1	52.8	64.1
No but sell software on-campus	3.3	4.7	.0	5.8	4.5	1.1
Campus bookstore	22.2	39.1	25.7	29.5	18.2	19.3
Campus center	14.4	37.5	60.0	15.4	15.8	4.1
Off-campus dealer	10.0	7.8	11.4	10.3	8.7	11.3
Does your campus have a written policy on copyrighted software/piracy?						
No	22.0	6.3	12.1	17.8	27.7	22.3
Under development	20.2	17.2	15.2	22.4	20.8	19.8
Yes	57.7	76.6	72.7	59.9	51.5	57.8
Has your campus reviewed the EDUCOM Code?						
No	53.4	25.4	18.2	39.5	55.0	66.7
Yes--not adopted	11.3	11.9	9.1	15.1	10.4	10.5
Yes--adopted	35.3	62.7	72.7	45.4	34.6	22.8

Percentages by Campus Category

ACADEMIC & INSTRUCTIONAL COMPUTING POLICIES AND PROCEDURES	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Does your campus have a formal plan for integrating computers in curriculum?...	28.6	16.9	33.3	25.8	26.4	33.6
Does your campus have formal projects for developing instructional courseware?.....	35.1	53.8	52.8	35.2	25.2	39.1
Does your campus have support for faculty developing instructional courseware?.....	47.2	56.9	55.6	50.3	37.2	52.5
Does your campus provide support for faculty to develop research software?..	27.8	41.5	38.9	38.4	28.7	18.9
Does your campus have a policy for rewarding courseware development?.....	13.5	15.4	11.1	13.8	11.4	15.3
Does your campus have a royalty-sharing program for faculty courseware?.....	13.7	47.7	41.7	16.4	6.5	10.4
Does your campus have a library of academic software for faculty evaluation?.....	29.8	38.5	47.2	38.4	26.1	26.2
Does your campus have an agreement for duplication/distribution of software?..	70.6	87.7	91.7	76.7	68.3	65.0
Does your campus assist faculty moving applications to the desktop?.....	58.8	84.6	83.3	74.8	54.3	49.2

Percentages by Campus Category

FUTURE ISSUES AFFECTING CAMPUS COMPUTING HOW IMPORTANT OVER NEXT 2-3 YEARS?	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Operating systems:						
MS-DOS	5.4	5.1	4.7	5.3	5.4	5.6
Windows	5.8	5.9	5.8	5.8	5.7	5.9
Windows/NT	4.2	4.7	4.9	4.5	4.0	4.0
OS/2	2.7	2.9	2.3	2.8	2.5	2.9
Macintosh	4.8	5.3	5.9	5.3	5.1	4.1
Unix	4.4	5.9	6.3	4.7	4.6	3.6
NeXTStep	1.8	2.2	2.2	1.9	1.7	1.6
Solaris	1.9	3.5	3.8	2.0	1.7	1.5
Taligent	1.8	2.4	3.3	2.0	1.6	1.6
Hardware:						
Palmtop computers	2.5	3.0	3.1	2.7	2.4	2.3
Handwriting PDAs	2.5	3.1	3.4	2.6	2.4	2.4
Notebook computers	4.5	5.0	5.7	4.7	4.5	4.2
'386 and '386SX CPUs	3.9	4.0	4.0	3.6	3.9	4.1
'486 and '486SX CPUs	6.1	6.0	6.0	6.1	6.0	6.2
Pentium	4.2	4.8	4.9	4.7	4.0	3.8
Macintosh	4.8	5.5	5.9	5.4	5.0	4.1
Alpha(DEC)	3.0	4.5	3.7	3.5	3.0	2.3
PowerPC(Apple/IBM)	3.4	4.5	4.9	3.8	3.4	2.9
Unix Workstations	3.9	5.8	6.1	4.3	4.0	3.0
User support & service						
User support & training	6.2	6.3	6.6	6.3	6.2	6.1
Charging for previously free services	3.3	4.2	3.4	3.4	3.2	3.2
Upgrading aging hardware	6.1	5.8	6.0	6.1	6.2	6.2
Upgrading aging software	6.1	5.9	5.8	6.1	6.1	6.2

Means by Campus Category
(Scale from 1 "Not Important" to 7 "Very Important")

FUTURE ISSUES AFFECTING CAMPUS COMPUTING HOW IMPORTANT OVER NEXT 2-3 YEARS?	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Networking						
Local area networks	6.3	6.2	6.6	6.3	6.3	6.3
Campus-wide networks	6.5	6.6	6.9	6.6	6.5	6.3
Merging data/telecomm networks	5.2	5.7	5.2	5.2	4.9	5.3
Connect PC-LANS to campus networks	5.9	6.2	6.3	6.1	5.8	5.8
Access to intercampus networks	5.9	6.3	6.5	6.3	5.8	5.7
Electronic mail	6.1	6.5	6.8	6.3	6.1	5.9
Network fax	4.4	4.5	4.4	4.4	4.2	4.5
Internet resources	5.8	6.5	6.6	6.2	5.9	5.2
Resale and Distribution						
Hardware resale contracts	3.4	4.3	5.6	3.5	3.7	2.7
Network fax	4.4	4.5	4.4	4.4	4.2	4.5
Software resale contracts	3.4	4.7	5.4	3.4	3.6	2.6
Software site licensing	5.5	5.8	6.1	5.6	5.5	5.3
Instructional applications						
Developing instructional software	4.2	4.6	4.4	4.4	3.9	4.3
Instructional software in classes	5.7	5.4	5.7	5.6	5.6	5.9
Instructional software as supplement	5.8	5.6	5.8	5.7	5.8	5.9
Computer-based presentation facilities	5.7	5.8	5.9	5.8	5.6	5.8
Internet resources for instruction	5.3	5.5	5.9	5.5	5.5	4.8

Means by Campus Category
(Scale from 1 "Not Important" to 7 "Very Important")

ADDRESSING BUDGET ISSUES BY:	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Reducing purchases of computer technology:						
Doing Already	23.0	32.8	17.1	20.8	22.0	23.8
Beginning 93-94	5.9	3.3	5.7	9.7	4.3	6.1
Reviewing for 93-94	9.3	13.1	11.4	11.0	5.3	11.3
Decided not to do	61.8	50.8	65.7	58.4	68.3	58.8
Charging new fees to depts./service units:						
Doing Already	16.7	32.8	38.9	19.3	13.9	12.6
Beginning 93-94	2.1	7.8	2.8	2.0	.9	2.1
Reviewing for 93-94	16.2	21.9	22.2	16.7	15.8	14.7
Decided not to do	65.0	37.5	36.1	62.0	69.3	70.6
Charging new fees to individual users:						
Doing Already	22.4	37.9	30.6	25.2	19.3	20.4
Beginning 93-94	3.6	3.4	2.8	4.8	1.9	4.9
Reviewing for 93-94	19.4	24.1	27.8	16.3	21.5	17.0
Decided not to do	54.6	34.5	38.9	53.7	57.3	57.7
Exploring less expensive hardware options:						
Doing Already	71.7	82.8	69.4	67.7	72.8	70.6
Beginning 93-94	5.3	3.1	5.6	9.0	2.4	6.7
Reviewing for 93-94	11.6	7.8	11.1	11.0	12.8	11.4
Decided not to do	11.5	6.3	13.9	12.3	11.9	11.4
Exploring less expensive software options:						
Doing Already	70.7	82.0	77.8	65.6	70.5	70.6
Beginning 93-94	4.8	4.9	2.8	8.4	2.7	5.2
Reviewing for 93-94	11.3	6.6	11.1	10.4	12.8	11.1
Decided not to do	13.2	6.6	8.3	15.6	14.0	13.1

Percentages by Campus Category

ADDRESSING BUDGET ISSUES BY:	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Leasing rather than buying hardware:						
Doing Already	12.1	14.5	24.2	6.1	14.8	10.4
Beginning 93-94	2.1	1.6	3.0	1.4	2.2	2.4
Reviewing for 93-94	10.5	6.5	6.1	10.9	9.3	12.8
Decided not to do	75.3	77.4	66.7	81.6	73.8	74.4
More active recycling of older equipment:						
Doing Already	83.9	85.2	85.7	83.6	83.1	84.3
Beginning 93-94	4.5	4.9	5.7	3.9	3.0	6.0
Reviewing for 93-94	5.6	8.2	5.7	3.3	8.2	3.7
Decided not to do	6.0	1.6	2.9	9.2	5.7	6.0
Consortial purchasing programs:						
Doing Already	45.8	71.2	42.4	61.3	37.7	42.4
Beginning 93-94	2.5	1.7	6.1	3.5	2.3	2.2
Reviewing for 93-94	13.4	6.8	21.2	7.7	19.2	10.9
Decided not to do	38.2	20.3	30.3	27.5	40.9	44.5
Vendor Financing:						
Doing Already	17.8	25.0	31.3	16.8	16.3	16.9
Beginning 93-94	1.3	.0	.0	2.1	2.0	.6
Reviewing for 93-94	9.2	8.3	12.5	6.3	12.3	7.3
Decided not to do	71.7	66.7	56.3	74.8	69.3	75.1

Percentages by Campus Category

ADDRESSING BUDGET ISSUES BY:	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Reducing hours in public access facilities:						
Doing Already	16.0	21.0	20.6	22.7	10.1	17.2
Beginning 93-94	2.7	4.8	2.9	5.3	2.2	1.5
Reviewing for 93-94	8.1	12.9	5.9	8.0	5.0	10.5
Decided not to do	73.2	61.3	70.6	64.0	82.6	70.8
Reducing services (i.e., less consulting):						
Doing Already	22.1	31.7	30.3	23.6	17.7	23.1
Beginning 93-94	3.6	4.8	9.1	6.8	2.8	2.2
Reviewing for 93-94	9.9	20.6	9.1	11.5	6.3	10.6
Decided not to do	64.4	42.9	51.5	58.1	73.1	64.2
Reorganizing operations:						
Doing Already	44.7	69.8	60.0	47.0	38.6	43.0
Beginning 93-94	6.1	4.8	8.6	10.7	6.4	3.7
Reviewing for 93-94	17.3	15.9	14.3	20.1	17.0	16.8
Decided not to do	31.9	9.5	17.1	22.1	37.9	36.4
Reducing staff:						
Doing Already	22.0	44.4	52.9	22.5	15.6	20.3
Beginning 93-94	2.6	.0	.0	2.6	2.5	3.3
Reviewing for 93-94	6.5	9.5	5.9	6.6	3.8	8.5
Decided not to do	68.9	46.0	41.2	68.2	78.0	67.9
Outsourcing academic computing operations:						
Doing Already	2.5	1.7	2.9	2.0	2.3	3.2
Beginning 93-94	.5	1.7	.0	.7	.3	.3
Reviewing for 93-94	6.7	10.0	.0	6.7	7.4	6.1
Decided not to do	90.3	86.7	97.1	90.6	90.0	90.4

Percentages by Campus Category

STRATEGIC PLANNING ISSUES: HOW IMPORTANT OVER NEXT 2-3 YEARS?	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Assessing benefits of existing investments in computing resources.....	5.4	5.4	5.3	5.4	5.4	5.5
Clarifying goals and campus plans for technology resources.....	6.1	6.0	6.0	6.1	6.1	6.1
Providing rewards for faculty to support technology curriculum integration.....	4.6	4.8	4.6	4.7	4.5	4.6
Allocating campus funds to support expanded services.....	5.4	5.3	5.3	5.3	5.5	5.3
Faculty concerns about the benefits of computing in the curriculum.....	5.1	5.0	5.1	5.1	5.0	5.1
Administrative concerns about benefits of computing in the curriculum.....	4.9	5.0	4.8	4.9	4.9	5.0
Developing/strengthening vendor relationships.....	4.5	4.8	5.3	4.5	4.5	4.4
Charging fees to students for desktop computer access.....	3.5	4.2	2.6	3.7	3.2	3.6

Means by Campus Category
(Scale from 1 "Not Important" to 7 "Very Important")

STRATEGIC PLANNING ISSUES: HOW IMPORTANT OVER NEXT 2-3 YEARS?	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Establishing/maintaining campus-wide standards for hardware.....	5.5	5.1	5.3	5.3	5.6	5.7
Establishing/maintaining campus-wide standards for software.....	5.6	5.3	5.5	5.5	5.7	5.7
Integrating computing services with allied service departments.....	5.4	5.5	5.3	5.3	5.6	5.3
Expanding computer networking across the campus.....	6.2	6.5	6.2	6.3	6.3	6.1
Operating a computer resale program for students and faculty.....	3.5	4.2	5.0	3.4	3.8	2.9
Developing budget mechanisms to replace aging equipment on a routine basis.....	5.8	5.8	5.5	5.6	5.9	5.8
Moving applications from mainframe to other/smaller platforms.....	4.7	5.5	5.8	4.8	4.6	4.5

Means by Campus Category
(Scale from 1 "Not Important" to 7 "Very Important")

THIS YEAR'S COMPUTING BUDGET COMPARED TO LAST YEAR'S	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Total academic computing budget:						
Reduced > 5%	13.5	12.3	19.4	16.6	9.0	16.0
Reduced 3-5%	5.5	18.5	8.3	3.2	4.2	5.0
Reduced 1-3%	7.5	18.5	2.8	7.6	5.1	8.2
No change	33.2	29.2	27.8	45.9	29.7	32.1
Increased 1-3%	15.3	10.8	22.2	13.4	16.2	15.5
Increased 3-5%	10.1	6.2	11.1	6.4	15.0	7.6
Increased > 5%	15.0	4.6	8.3	7.0	20.7	15.7
Purchases of desktop computers by academic computing units:						
Reduced > 5%	13.4	7.7	8.3	15.3	9.0	18.4
Reduced 3-5%	5.2	12.3	2.8	5.1	3.0	6.1
Reduced 1-3%	6.3	13.8	5.6	5.7	5.4	6.1
No change	34.4	40.0	27.8	40.1	36.4	29.5
Increased 1-3%	14.3	13.8	13.9	10.2	14.2	16.4
Increased 3-5%	10.1	9.2	22.2	10.8	11.1	7.6
Increased > 5%	16.3	3.1	19.4	12.7	20.8	15.8
All institutional purchases of desktop computers:						
Reduced > 5%	13.0	10.8	8.3	14.1	9.3	16.9
Reduced 3-5%	4.7	10.8	.0	5.8	2.7	5.5
Reduced 1-3%	7.4	13.8	11.1	7.1	6.0	7.3
No change	30.9	32.3	22.2	35.9	29.8	30.2
Increased 1-3%	16.3	20.0	27.8	10.9	16.6	16.6
Increased 3-5%	9.3	7.7	8.3	12.2	10.8	7.0
Increased > 5%	18.4	4.6	22.2	14.1	24.7	16.6
Did your budget for academic computing experience a mid-year cut/recission?	15.8	29.7	22.2	16.7	14.1	13.7

Percentages by Campus Category

LIBRARIES AND COMPUTING	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Does your campus have desktop computers in the library?.....	86.8	86.2	94.4	91.8	87.4	83.3
Library patrons use computers for:						
catalog access.....	61.5	75.4	80.6	73.0	53.7	59.6
database access.....	57.0	72.3	72.2	65.4	56.3	49.7
word processing.....	51.2	52.3	38.9	52.2	49.3	53.6
CD ROM access.....	75.8	75.4	88.9	84.9	79.5	67.2

Percentages by Campus Category

NETWORKING: HOW IMPORTANT ARE THESE ISSUES IN PLANNING FOR NETWORKING	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Connecting desktop systems to share departmental or workgroup files.....	5.3	5.7	5.7	5.3	5.3	5.3
Connecting desktop systems to share software resources.....	5.8	5.8	6.2	5.7	5.8	5.7
Supporting instructional labs and clusters.....	6.0	6.2	6.3	6.1	5.9	6.0
Intradepartmental mail systems on LANS.	5.0	5.5	5.1	5.0	4.7	5.0
Campus-wide mail systems on a network..	5.8	6.5	6.7	6.0	5.7	5.5
Linking PCs to larger computing systems	5.6	6.1	6.1	5.9	5.3	5.5
Linking your campus with regional or national networks.....	5.7	6.3	6.4	6.1	5.8	5.3
Building a campus Gopher.....	4.2	5.6	5.8	4.9	4.2	3.6

Means by Campus Category
(Scale from 1 "Not Important" to 7 "Very Important")

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NETWORKING	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2 Yr Public College
Are network issues more or less important than last year?						
More Important	73.8	73.8	69.[illegible]	79.9	75.7	69.9
Less Important	1.3	4.6	.0	1.9	1.8	.3
About the Same	23.5	21.5	30.6	17.6	21.7	27.3
Does your campus have a campus wide network backbone?	62.5	92.3	97.2	78.0	53.1	55.7
What is the primary medium for your campus backbone?						
Fiber	40.0	72.3	80.6	54.1	37.5	26.5
ISDN	.2	1.5	.0	.0	.3	.0
Ethernet/Coax	17.7	18.5	11.1	20.8	12.9	21.3
Twisted Pair	5.0	1.5	.0	3.8	4.4	7.1
Other	1.3	1.5	5.6	1.3	.9	1.4
Does your campus charge fees for use of E-mail?	1.7	7.7	2.8	1.9	1.8	.3
Does your campus have access to the Internet?	65.3	98.5	94.4	93.1	58.9	50.3
Does your campus have access to the Bitnet?	37.8	87.7	72.2	70.4	26.7	21.9
Our campus has either Internet or Bitnet access	69.4	100.0	97.2	97.5	64.2	53.8
Do you have a campus gopher?	14.3	63.1	50.0	17.6	11.1	3.6

Percentages by Campus Category
(*Columns may total more than 100% since responses were not exclusive)

NETWORKING	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
What facilities/departments on your campus have access to the campus backbone?	58.9	89.2	91.7	74.2	48.1	53.8
Library(s)	55.4	90.8	94.4	74.2	44.9	47.0
Student Services	51.3	78.5	83.3	61.6	39.9	49.5
Development	42.6	76.9	72.2	54.7	37.5	33.1
Budget/Financial Offices	55.6	89.2	77.8	69.2	44.9	51.6
Public Access Computer Labs	42.8	87.7	94.4	65.4	37.0	25.4
Departmental Computer Labs	44.1	80.0	97.2	63.5	34.9	32.5
Student Dormatories	16.5	43.1	61.1	25.2	17.6	2.7
Biological & Physical Sciences	45.3	84.6	88.9	67.3	37.2	32.0
Business	46.8	90.8	80.6	64.8	34.3	39.6
Education	37.5	70.8	72.2	61.0	33.4	21.9
Engineering	32.3	86.2	83.3	45.3	15.8	27.3
Fine & Performing Arts	33.8	60.0	66.7	52.8	26.7	24.3
Humanities	41.3	69.2	80.6	59.1	34.9	30.6
Social Science	42.5	78.5	80.6	63.5	35.8	29.5

Percentages by Campus Category

NETWORKING	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Who has access to electronic mail?						
Undergraduate students	42.0	84.6	91.7	69.2	46.9	13.1
Graduate students	25.1	86.2	91.7	54.7	19.1	.5
Faculty	69.0	89.2	91.7	88.7	63.9	59.3
Administrators	75.4	90.8	91.7	88.7	64.2	75.7
Staff	68.3	87.7	91.7	85.5	57.8	64.8
Undergraduate students assessed fee to use e-mail	1.0	4.6	.0	2.5	.9	.0
Graduate students assessed fee to use e-mail	.7	3.1	.0	1.9	.6	.0
Faculty assessed fee to use e-mail	.6	3.1	.0	.6	.9	.0
Administrators assessed fee to use e-mail	.9	6.2	2.8	.6	.9	.0
Staff assessed fee to use e-mail	.8	4.6	2.8	1.3	.6	.0
Who has access to Bitnet/Internet						
Undergraduate students	43.8	90.8	97.2	76.1	45.7	14.5
Graduate students	29.2	96.9	100.0	67.9	21.7	.3
Faculty	66.9	98.5	100.0	98.7	63.0	47.8
Administrators	67.1	100.0	100.0	96.9	60.1	51.6
Staff	57.1	96.9	94.4	87.4	51.9	38.0

Percentages by Campus Category

NETWORKING: WHO HAS ACCESS TO E-MAIL	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Undergraduate students who use e-mail..	28.6	23.1	46.7	24.8	32.4	16.3
Graduate students who use e-mail.....	31.3	36.6	46.7	26.4	24.8	.
Faculty who use e-mail.....	39.5	41.5	53.4	43.3	38.9	34.3
Administrators who use e-mail.....	49.0	44.2	44.9	53.4	41.3	54.5
Staff who use e-mail.....	42.8	37.6	41.8	44.2	37.8	47.9

Mean Percentage by Campus Category

COMPUTING FOR DISABLED STUDENTS	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
How would you describe arrangements for computer access for disabled end-users?						
Centralized access	16.0	7.7	25.7	14.6	18.3	15.0
Segmented access	12.3	23.1	2.9	13.3	5.3	17.5
Mixed access	26.8	43.1	28.6	33.5	11.8	34.6
General access	44.9	26.2	42.9	38.6	64.5	33.0
Is your campus currently reviewing the computing needs of disabled students?						
No plans	39.7	22.2	30.3	32.3	58.1	29.8
No--completed review	19.3	23.8	27.3	22.6	12.2	22.9
Review underway	30.8	47.6	30.3	33.5	18.2	38.4
Review next year	10.1	4.8	12.1	11.6	11.6	8.9

Percentages by Campus Category

ORGANIZATION OF CAMPUS COMPUTING AND TECHNOLOGY UNITS	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Our campus is part of a multicampus system with shared computing resources.	36.0	40.0	27.8	51.6	15.0	48.9
Academic and administrative computing on my campus are:						
Separate units	54.8	38.5	55.6	40.9	58.4	60.4
A single unit	43.1	61.5	44.4	57.9	39.9	36.3
Academic computing has been reorganized in past two years	36.0	43.1	36.1	39.6	32.6	36.3
We anticipate reorganization of academic computing in next two years	37.7	44.6	25.0	29.6	39.0	40.2
Head of academic computing reports to:						
President	8.2	4.6	.0	8.8	6.2	11.2
Provost	29.0	40.0	36.1	32.1	37.0	17.5
Vice president	33.2	44.6	61.1	40.9	31.1	27.0
Dean	24.6	4.6	.0	15.1	22.0	37.2
Library services have been reorganized in past two years	30.5	21.5	25.0	25.8	29.6	35.5
We anticipate reorganization of library services in next two years	28.6	23.1	16.7	14.5	34.0	32.0
Head of library reports to:						
President	4.6	4.6	.0	3.1	4.4	5.7
Provost	44.0	67.7	63.9	59.7	51.6	23.8
Vice president	18.8	15.4	33.3	18.9	15.0	21.6
Dean	28.1	7.7	2.8	13.8	25.8	42.6

Percentages by Campus Category

ORGANIZATION OF CAMPUS COMPUTING AND TECHNOLOGY UNITS	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Level of involvement of our chief academic officer in instructional technology:						
Not interested-involved	6.3	6.3	13.9	6.3	8.1	3.7
Interested	26.5	39.1	38.9	29.7	27.4	20.7
Somewhat involved	26.9	26.6	30.6	36.1	24.7	24.4
Directly involved	40.3	28.1	16.7	27.8	39.8	51.1
How does your campus deal with the 'life cycle' issues of desktop computers?						
One-time allocation	44.0	56.9	33.3	44.3	43.2	43.5
Developing plan	36.1	32.3	36.1	37.3	35.7	36.6
Have Plan	19.7	9.2	30.6	18.4	21.1	19.9

Percentages by Campus Category

STUDENTS/FACULTY PREPARATION FOR USE OF COMPUTERS IN INSTRUCTION & SCHOLARSHIP	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2 Yr Public College
How well train in tech. challenges:						
for students in bio/phys. sci.?.....	3.4	3.5	3.9	3.4	3.4	3.3
for students in business?.....	3.7	3.8	3.9	3.7	3.5	3.9
for students in education?.....	3.2	3.3	3.1	3.2	3.2	3.1
for students in engineering?.....	3.7	4.3	4.2	3.7	3.4	3.7
for students in fine/perf. arts?.....	2.9	2.8	3.2	2.8	2.9	2.9
for students in humanities?.....	2.9	2.8	3.3	2.8	2.9	3.0
for students in social science?.....	3.1	3.2	3.8	3.1	3.2	2.9
Faculty preparation for instruction in:						
bio/phys. sci.?.....	3.4	3.5	3.7	3.4	3.5	3.4
business?.....	3.6	3.6	3.6	3.5	3.4	3.9
education?.....	2.9	3.1	3.0	3.0	2.9	2.9
engineering?.....	3.7	4.1	4.0	3.6	3.4	3.8
fine/perf. arts?.....	2.7	2.6	2.9	2.6	2.8	2.7
humanities?.....	2.7	2.7	2.9	2.6	2.7	2.7
social science?.....	2.9	3.0	3.4	2.9	3.0	2.8
Faculty preparation for scholarship in:						
bio/phys. sci.?.....	3.4	3.8	4.0	3.4	3.4	3.2
business?.....	3.3	3.7	3.7	3.4	3.1	3.4
education?.....	2.9	3.2	3.1	3.0	2.8	2.8
engineering?.....	3.4	4.1	4.1	3.5	3.2	3.3
fine/perf. arts?.....	2.7	2.8	3.0	2.6	2.6	2.7
humanities?.....	2.7	2.9	2.9	2.5	2.7	2.7
social science?.....	2.9	3.3	3.6	2.9	3.0	2.7

Means by Campus Category
(Scale from 1 "Poor" to 5 "Excellent")

EFFECTS OF COMPUTER TECHNOLOGY	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Faculty believe technology can enhance classes and learning.....	3.0	2.9	3.0	3.0	2.9	3.0
Faculty have unreasonable expectations about user support services.....	2.6	2.7	2.8	2.8	2.5	2.6
My president has questions about costs of computing support.....	2.2	2.2	2.1	2.1	2.3	2.2
Technology has enhanced instruction, not productivity of faculty.....	2.4	2.3	2.4	2.4	2.4	2.4

Means by Campus Category
(Scale from 1 "Strongly Disagree" to 4 "Strongly Agree")

EFFECTS OF COMPUTER TECHNOLOGY	ALL CAMPUSES	Public University	Private University	4-Yr Public College	4-Yr Private College	2-Yr Public College
Faculty believe technology can enhance classes and learning						
Strongly Disagree	1.9	3.1	.0	1.9	3.3	.6
Disagree	13.2	9.2	14.3	13.9	14.3	12.4
Agree	69.4	83.1	68.6	69.0	67.5	68.9
Strongly Agree	15.5	4.6	17.1	15.2	14.9	18.1
Faculty have unreasonable expectations about user support services						
Strongly Disagree	5.2	1.6	8.3	5.1	5.1	5.7
Disagree	43.3	39.1	27.8	29.7	49.4	46.0
Agree	37.4	46.9	41.7	44.9	33.2	35.7
Strongly Agree	14.1	12.5	22.2	20.3	12.3	12.6
My president has questions about costs of computing support						
Strongly Disagree	19.6	21.5	16.7	23.2	17.1	20.4
Disagree	49.4	44.6	58.3	46.5	48.0	52.0
Agree	22.4	24.6	22.2	24.5	24.0	19.5
Strongly Agree	8.5	9.2	2.8	5.8	10.8	8.0
Technology has enhanced instruction, not productivity of faculty						
Strongly Disagree	8.2	12.7	11.1	6.0	6.7	9.5
Disagree	49.4	52.4	41.7	52.7	52.6	45.2
Agree	37.2	30.2	47.2	36.0	35.9	39.2
Strongly Agree	5.2	4.8	.0	5.3	4.9	6.1

Percentages by Campus Category

CAMPUS COMPUTING 1993

The USC National Survey of Desktop Computing in Higher Education

Appendices

A. Methodology

B. Survey Form

C. Participating Institutions

Appendix A

Methodology

The 1993 USC Survey of Desktop computing was designed to collect information about campus planning, policies, and procedures affecting the use of desktop computers (i.e., personal computers and workstations) from colleges and universities in the United States (including Alaska and Hawaii).

The 1993 survey was mailed to some 2500 campuses in late Spring, 1993. Questionnaires were sent to all two- and four-year colleges and universities, with the following exceptions. Small branch campuses of multi-campus districts enrolling only a few hundred students and some two- and four-year institutions that admit less than one hundred students annually were omitted from the survey sample, as were proprietary schools.

Questionnaires were mailed to the institution's chief academic computing officer. In those instances where it was not possible to identify, by name, an individual in the role of director of academic or campus computing, the questionnaire was then mailed to the chief academic officer of the institution.

A second wave of survey instruments was mailed to nonresponding institutions in July. A total of 1011 campuses returned completed and usable questionnaires by mid-October, the closing date for data analysis. The number of participating campuses are listed below, by campus type:[1]

Public Research Universities	65
Private Research Universities	36
Public Four-Year Colleges	159
Private Four-Year Colleges	341
Public Two-Year Colleges	366
Private Two-Year Colleges	44

The overall response rate to the survey was about 40 percent. Within some segments of campus types, however, the response rate was higher. Among public two-year colleges, the response rate (about 35 percent) is very good for this type of survey and reflects a rich array of institutional responses. Similarly, while fewer than half of the nation's private four-year colleges responded to the survey, the data from these institutions is nonetheless varied and consequently rich with information about computing practices and policies in these types of institutions. The small number of private two-year campuses responding to the survey once again precluded their being included in this report.

[1] The institutional typology presented here and used in the survey analysis and report reflects a variation on the widely-used Carnegie model (Carnegie Advancement for the Foundation of Teaching, Princeton, NJ). This model has also been used by UCLA's Higher Education Research Institute for the annual American Council on Education-UCLA Cooperative Institutional Research Program Survey of Entering Freshmen.

USC National Survey of Desktop Computer Use in Higher Education

Spring 1993

Dear Colleague:

This is the fourth annual survey, part of a national project focused on campus policies, plans, and procedures affecting desktop computing in two- and four-year colleges and universities. Your responses will contribute to a better understanding of the ways campuses across the country are planning for and using desktop computers.

Please take a few minutes to complete this questionnaire. All responses will be treated in a confidential manner. You will receive a copy of the survey results in the Fall.

Kenneth C. Green
Project Director

MAILING LABEL

Please attach a business card with the correct name, title, and address of survey respondent. Updated addresses will be used to send you a copy of the survey results.

Please respond to all questions based on institutional policies, i.e., policies that apply broadly to students, faculty, administrators and staff in all units of your institution.

A. General Campus Policies About Desktop Computing

1. Does your campus have a formal policy promoting or mandating computers/computing resources for
   curriculum utilization? ① no ② yes
   undergraduates? ① no ② yes
   graduate students? ① no ② yes

2. Does your institution have a *computer instruction* or *computer competency* requirement for all undergraduates?
   ① no ② yes

3. Does your campus have a formal policy about the *confidentiality of computer data?*
   ① no ② yes

4. Does your campus have a formal policy regarding the *development of software* by faculty and staff?
   ① no ② yes

5. Please check the *Operating Systems/Interfaces* recommended or supported by your institution:
   ❑ Apple II ❑ MS-DOS ❑ None (my campus *does not* recommend a specific operating system or interface.)
   ❑ Macintosh ❑ Windows
   ❑ UNIX ❑ OS/2
   ❑ Solaris ❑ NeXTStep

6. Does your institution *require* or *strongly recommend* microcomputer ownership? *(please check all that apply)*
   ❑ no
   ❑ yes, for students in specific disciplines or programs
   ❑ yes, for students in individual academic units or schools
   ❑ yes, for all students

7. Does your institution (or individual units or programs) specifically recommend a particular brand or products for
   students? ① no ② yes
   faculty? ① no ② yes
   administrators/staff? ① no ② yes

   If you answered "yes" to any part of #7, please go on to #8; otherwise, please go on to #9.

8. Please check the brand(s)/kinds(s) of *desktop* computer system(s) generally recommended by your institution:

Apple	IBM & IBM Compatibles	UNIX Systems
❑ Macintosh Classic	❑ IBM PS/2 systems	❑ DEC
❑ Macintosh LC	❑ '386/'386SX systems	❑ HP
❑ MacII/Centris	❑ '486/'486SX systems	❑ IBM
❑ Macintosh Quadra	❑ Pentium	❑ Sun
❑ Macintosh PowerBook		

B. Hardware Acquisition Policies and Procedures

9. Does your institution have a special pricing or resale agreement with one or more *hardware* vendors?
   ① no, we do not have any kind of computer resale program.
   ② no, we do not have a special discount program although we do sell computers through an on-campus facility.
   ③ yes, for hardware sold through the campus bookstore.
   ④ yes, for hardware sold through a special campus center or outlet *not* affiliated with our bookstore.
   ⑤ yes, for hardware sold by special agreement with an off-campus dealer.

10. Does your institution *require* computer buyers to purchase software as part of the resale program?
    ① no ② yes

11. Does your institution *encourage* computer buyers to purchase software as part of the resale program?
    ① no ② yes

C. Software Acquisition and Utilization Issues

12. Does your institution have a special pricing or resale agreement with one or more *software* vendors?
   ① no, we do not have a software resale program.
   ② no, we do not have a special discount program although we do sell software through an on-campus facility.
   ③ yes, for software sold through the campus bookstore.
   ④ yes, for software sold through a special campus center or outlet *not* affiliated with our bookstore.
   ⑤ yes, for software sold by special agreement with an off-campus dealer.

13. Does your institution have policies and/or procedures regarding the *duplication of copyrighted software* and *software piracy?* (Please mark all that apply.)
   ❑ no organized institutional activity (skip to #14)
   ❑ information in the student handbook
   ❑ information in the faculty handbook
   ❑ information in the staff handbook
   ❑ discussion in training classes
   ❑ discussion in new student orientation
   ❑ general promotional effort on campus
   ❑ discussion in faculty orientation
   ❑ discussion in staff orientation
   ❑ information distributed with computer purchases
   ❑ potential for sanctions against students
   ❑ potential for sanctions against faculty
   ❑ potential for sanctions against staff

14. Does your institution have a written policy regarding the *duplication of copyrighted software/software piracy?*
   ① no
   ② no, but under development
   ③ yes (effective date: _____)

15. Has your institution reviewed the EDUCOM Code regarding the duplication of copyrighted software?
   ① no
   ② yes, but we decided not to adopt or endorse it here.
   ③ yes, and we have endorsed it or modified it as part of our institutional policy.

D. Academic & Instructional Computing Policies and Procedures

16. Does your campus have a formal plan for integrating desktop computers into the curriculum?
    ① no ② yes

17. Does your campus have one or more formal projects for developing desktop instructional software/courseware?
    ① no ② yes

18. Does your campus provide any formal support or assistance (e.g., funding, release time, technical assistance) to help faculty who wish to develop *instructional* software/courseware?
    ① no ② yes

19. Does your campus provide any formal support or assistance (e.g., funding, release time, technical assistance) to assist faculty who may wish to develop software to assist their *research*?
    ① no ② yes

20. Does your campus have a policy or program for rewarding courseware development or providing incentives for faculty to develop instructional software/courseware?
    ① no ② yes

21. Does your campus have a royalty-sharing program for faculty who develop instructional software/courseware using campus resources and/or staff?
    ① no ② yes

22. Does your campus maintain a library of academic courseware for faculty review and evaluation?
    ① no ② yes

please go on to the next page ➡

23. Does your campus have one or more agreements or licenses for on-campus duplication and distribution of desktop computer software products?
    ① no ② yes
24. Does your campus provide assistance to faculty moving applications from mainframe to desktop computers or workstations?
    ① no ② yes

E. Computing for Disabled Students

25. How would you describe the organizational arrangements for providing computer access for disabled end-users?
    ① *centralized* access, through main and/or departmental computer centers.
    ② *segmented* access, through a special office specifically charged to assist disabled end-users.
    ③ *mixed* access, through both a special office and also through main and/or departmental computer centers.
    ④ *general access*, with no formal policy or procedure(s) for specifically serving disabled students.

26. Is your campus currently reviewing the computing needs of disabled students?
    ① no, and we have no plans to do so in the next year or so.
    ② no, because we recently completed this type of review.
    ③ yes, a review is now underway.
    ④ yes, a review is planned for the coming academic year (1993-1994).

F. Future Issues Affecting Campus Computing

27. As you think about the future of computing at your institution, please indicate how *important* you see the following items in the overall campus computing environment and computing policy over the next 2-3 years.

	Not Important						*Very Important*
Operating System/Interface/Development							
MS-DOS	①	②	③	④	⑤	⑥	⑦
Windows	①	②	③	④	⑤	⑥	⑦
Windows/NT	①	②	③	④	⑤	⑥	⑦
OS/2	①	②	③	④	⑤	⑥	⑦
Macintosh	①	②	③	④	⑤	⑥	⑦
UNIX	①	②	③	④	⑤	⑥	⑦
NeXTStep	①	②	③	④	⑤	⑥	⑦
Solaris	①	②	③	④	⑤	⑥	⑦
Taligent	①	②	③	④	⑤	⑥	⑦
Hardware							
Palmtop computers	①	②	③	④	⑤	⑥	⑦
Handwriting-recognition PDAs	①	②	③	④	⑤	⑥	⑦
Notebook computers	①	②	③	④	⑤	⑥	⑦
'386 and '386 SX CPUs	①	②	③	④	⑤	⑥	⑦
'486 and '486 SX CPUs	①	②	③	④	⑤	⑥	⑦
Pentium	①	②	③	④	⑤	⑥	⑦
Macintosh	①	②	③	④	⑤	⑥	⑦
Alpha (DEC)	①	②	③	④	⑤	⑥	⑦
PowerPC (Apple/IBM)	①	②	③	④	⑤	⑥	⑦
UNIX Workstations	①	②	③	④	⑤	⑥	⑦
User Support & Service							
User support & training	①	②	③	④	⑤	⑥	⑦
Charging users for services now provided at little or no cost	①	②	③	④	⑤	⑥	⑦
Upgrading aging hardware	①	②	③	④	⑤	⑥	⑦
Upgrading aging software	①	②	③	④	⑤	⑥	⑦

	Not Important						*Very Important*
Networking							
Local area networks	①	②	③	④	⑤	⑥	⑦
Campus-wide networks	①	②	③	④	⑤	⑥	⑦
Merging data & telecommunication networks	①	②	③	④	⑤	⑥	⑦
Connecting PC- LANS to campus-wide networks	①	②	③	④	⑤	⑥	⑦
Access to intercampus networks	①	②	③	④	⑤	⑥	⑦
Electronic mail	①	②	③	④	⑤	⑥	⑦
Network fax	①	②	③	④	⑤	⑥	⑦
Internet resources (Gopher, Listserv, etc.)	①	②	③	④	⑤	⑥	⑦
Resale and Distribution							
Hardware resale contracts	①	②	③	④	⑤	⑥	⑦
Software resale contracts	①	②	③	④	⑤	⑥	⑦
Software site licensing	①	②	③	④	⑤	⑥	⑦
Instructional Applications							
Developing instructional software	①	②	③	④	⑤	⑥	⑦
Using instructional software in classes	①	②	③	④	⑤	⑥	⑦
Using instructional software as a supplement to classes	①	②	③	④	⑤	⑥	⑦
Computer-based classroom presentation facilities	①	②	③	④	⑤	⑥	⑦
Internet resources for instruction	①	②	③	④	⑤	⑥	⑦

please go on to the next page ➡

28. Many campuses find themselves facing declining enrollments, reduced financial resources, and increasing costs. How is your campus addressing these issues as you view technology needs and services??

	Doing This Already	*Beginning in '93-'94 Year*	*Reviewing For '93-'94 Year*	*Decided Not To Do This*
Reducing purchases of computer technology	①	②	③	④
Charging fees to depts. and service units (e.g., networking, printing)	①	②	③	④
Charging fees to individual users (e.g., access, printing)	①	②	③	④
Exploring less expensive hardware options	①	②	③	④
Exploring less expensive software options	①	②	③	④
Leasing rather than buying hardware	①	②	③	④
More active recycling of older equipment to other departments and units	①	②	③	④
Consortial purchasing programs	①	②	③	④
Vendor financing	①	②	③	④
Reducing hours in public access facilities	①	②	③	④
Reducing services (e.g., less consulting)	①	②	③	④
Reorganizing operations (e.g., combining units to coordinate staffing)	①	②	③	④
Reducing staff	①	②	③	④
Outsourcing academic computing	①	②	③	④

G. Strategic and Budget Planning Issues

29. As you look at the future of computing on your campus, please indicate how important the following computing/technology issues will be in the overall campus computing environment over the next 2-3 years.

	Not Important						*Very Important*
Assessing the benefits of existing investments in computing and technology resources	①	②	③	④	⑤	⑥	⑦
Clarifying goals and campus plans for technology resources	①	②	③	④	⑤	⑥	⑦
Providing incentives and rewards for faculty to support technology integration into the curriculum	①	②	③	④	⑤	⑥	⑦
Allocating campus funds to support expanded services	①	②	③	④	⑤	⑥	⑦
Faculty concerns about the benefits of computing in the curriculum	①	②	③	④	⑤	⑥	⑦
Administrative concerns about the benefits of computing in the curriculum	①	②	③	④	⑤	⑥	⑦
Developing/strengthening vendor relationships	①	②	③	④	⑤	⑥	⑦
Charging fees to students for desktop computer access	①	②	③	④	⑤	⑥	⑦
Establishing/maintaining campus-wide standards for *hardware*	①	②	③	④	⑤	⑥	⑦
Establishing/maintaining campus-wide standards for *software*	①	②	③	④	⑤	⑥	⑦
Integrating computing services with allied service departments (for example, library services)	①	②	③	④	⑤	⑥	⑦
Expanding computer networking across the campus	①	②	③	④	⑤	⑥	⑦
Operating a computer resale program for students and faculty	①	②	③	④	⑤	⑥	⑦
Developing budget mechanisms to replace aging equipment on a routine basis	①	②	③	④	⑤	⑥	⑦
Moving applications from mainframe to other/smaller platforms (workstations, PCs, etc.)	①	②	③	④	⑤	⑥	⑦

30. Compared to last year (1992-93), how do you expect this year's budget to change with regard to academic computing overall, and to academic computing and institutional purchases of desktop computers?

	Reduced > 5%	*Reduced 3-5%*	*Reduced 1-3%*	*No Change*	*Increased 1-3%*	*Increased 3-5%*	*Increased >5%*
Total academic computing budget	①	②	③	④	⑤	⑥	⑦
Purchases of desktop computers by academic computing units	①	②	③	④	⑤	⑥	⑦
All institutional purchases of desktop computers	①	②	③	④	⑤	⑥	⑦

please go on to the next page ➨

31. Did your budget for academic computing experience a mid-year cut or recission during 1992-1993?
① no ② yes If yes, by what percentage? |__|__|%

H. Libraries and Computing

32. Does your campus have desktop computers in the library?
① no (skip to next question #33) ② yes (go on to question below)
If yes, how do library users make use of these computers (please check all that apply):
- ❑ catalog access
- ❑ database access
- ❑ word processing
- ❑ CD ROM access

33. How does your library/library system provide access to bibliographic citation indexes?
- ❑ print
- ❑ database on a campus CPU
- ❑ CD ROM
- ❑ other: _____
- ❑ dial-up access to off-campus *commercial* databases
- ❑ dial-up access to off-campus *educational* databases

I. Networking

34. How important are the following issues in discussions about and planning for networking on your campus?

	Not Important						*Very Important*
Connecting desktop systems to share departmental or workgroup files	①	②	③	④	⑤	⑥	⑦
Connecting desktop systems to share software resources	①	②	③	④	⑤	⑥	⑦
Supporting instructional labs and clusters	①	②	③	④	⑤	⑥	⑦
*Intra*departmental mail systems on LANS	①	②	③	④	⑤	⑥	⑦
Campus-wide mail systems on a network	①	②	③	④	⑤	⑥	⑦
Linking PCs to larger computing systems	①	②	③	④	⑤	⑥	⑦
Linking your campus with regional or national networks	①	②	③	④	⑤	⑥	⑦
Building a campus Gopher	①	②	③	④	⑤	⑥	⑦

35. Would you say that network issues are more or less important than last year, or about the same?
① More important ② Less important ③ About the same

36. Does your campus have a campus-wide network backbone?
① no (go on to question #39) ② yes

37. What is the primary medium for your campus backbone?
① Fiber ③ Ethernet/Coax ⑤ Other:_____
② ISDN ④ Twisted Pair

38. What facilities and departments on your campus have access to the campus backbone?

Offices/Labs/Facilities
- ❑ Central Administration
- ❑ Library(s)
- ❑ Student Services
- ❑ Development
- ❑ Budget/Financial offices
- ❑ Public Access Computer Labs
- ❑ Departmental Computer Labs
- ❑ Student Dormatories

Academic Departments
- ❑ Biological & Physical Sciences
- ❑ Business
- ❑ Education
- ❑ Engineering
- ❑ Fine & Performing Arts
- ❑ Humanities
- ❑ Social Science

39. Who has access to electronic mail accounts at your campus? (Please check all that apply and indicate your estimate of the percentage of these groups using e-mail.)

❑ Undergraduate Students	percent of undergraduates who use e-mail?	|__|__| %
❑ Graduate Students	percent of graduate students who use e-mail?	|__|__| %
❑ Faculty	percent of faculty who use e-mail?	|__|__| %
❑ Administrators	percent of administrators who use e-mail?	|__|__| %
❑ Staff	percent of staff who use e-mail?	|__|__| %

40. Does your campus charge fees for use of E-mail?
① no (skip to #42) ② yes

41. Which users are assessed a fee for using E-mail?
- ❑ Undergraduate students
- ❑ Graduate students
- ❑ Faculty
- ❑ Administrators
- ❑ Staff

please go on to the next page ➨

42. Does your campus have access to the Internet or Bitnet?
Internet ① no ② yes *Bitnet* ① no ② yes

43. Who is allowed to use the connections to Internet or Bitnet?
❑ Undergraduate students ❑ Faculty ❑ Staff
❑ Graduate students ❑ Administrators

44. Do you have a campus gopher?
① No ② No, but we are planning one ③ Yes

J. VENDOR ASSESSMENT

45. What is your assessment of the companies that sell desktop (i.e., personal computer and workstation) systems and software to the higher education market?

Ratings: ① Strongly Disagree (SD) ② Disagree ③ Agree ④ Strongly Agree (SA)

	Has Appropriate Products for Campus Users SD D A SA	*Understands Computing Issues Affecting My Campus* SD D A SA	*Will Play an Important Role in our Computing Plans for the Next 2-3 Years* SD D A SA
Hardware Vendors			
Apple	① ② ③ ④	① ② ③ ④	① ② ③ ④
AT&T/NCR	① ② ③ ④	① ② ③ ④	① ② ③ ④
Compaq	① ② ③ ④	① ② ③ ④	① ② ③ ④
DEC (Digital)	① ② ③ ④	① ② ③ ④	① ② ③ ④
Dell	① ② ③ ④	① ② ③ ④	① ② ③ ④
HP	① ② ③ ④	① ② ③ ④	① ② ③ ④
IBM	① ② ③ ④	① ② ③ ④	① ② ③ ④
NEC	① ② ③ ④	① ② ③ ④	① ② ③ ④
Sun Microsystems	① ② ③ ④	① ② ③ ④	① ② ③ ④
Toshiba	① ② ③ ④	① ② ③ ④	① ② ③ ④
Zenith	① ② ③ ④	① ② ③ ④	① ② ③ ④
Software/Network Vendors			
Aldus	① ② ③ ④	① ② ③ ④	① ② ③ ④
Auto-Desk	① ② ③ ④	① ② ③ ④	① ② ③ ④
Borland	① ② ③ ④	① ② ③ ④	① ② ③ ④
Cisco Systems	① ② ③ ④	① ② ③ ④	① ② ③ ④
Claris	① ② ③ ④	① ② ③ ④	① ② ③ ④
Computer Associates	① ② ③ ④	① ② ③ ④	① ② ③ ④
Farallon	① ② ③ ④	① ② ③ ④	① ② ③ ④
GTE (network services)	① ② ③ ④	① ② ③ ④	① ② ③ ④
Lotus	① ② ③ ④	① ② ③ ④	① ② ③ ④
Microsoft	① ② ③ ④	① ② ③ ④	① ② ③ ④
Minitab	① ② ③ ④	① ② ③ ④	① ② ③ ④
NeXT	① ② ③ ④	① ② ③ ④	① ② ③ ④
Novell	① ② ③ ④	① ② ③ ④	① ② ③ ④
Oracle	① ② ③ ④	① ② ③ ④	① ② ③ ④
SAS	① ② ③ ④	① ② ③ ④	① ② ③ ④
SPSS	① ② ③ ④	① ② ③ ④	① ② ③ ④
Systat	① ② ③ ④	① ② ③ ④	① ② ③ ④
WordPerfect	① ② ③ ④	① ② ③ ④	① ② ③ ④

K. ORGANIZATION OF CAMPUS COMPUTING AND TECHNOLOGY UNITS

46. Is your campus part of a multicampus system with shared computing resources: ① no ② yes

47. Academic and administrative computing on your campus are: ① separate units ② one single unit

48. Has your institution reorganized computing or library services within the past two years?
Academic Computing ① no ② yes *Library* ① no ② yes

49. Do you anticipate a reorganization of computing or library services within the next two years?
Academic Computing ① no ② yes *Library* ① no ② yes

please go on to the next page ➨

50. How does your campus coordinate academic computing and library operations? The heads of each unit report to:

Academic Computing	*Library*
① president	① president
② provost (chief academic officer)	② provost (chief academic officer)
③ vice president, (e.g., vp for info. svcs]	③ vice president, (e.g., vp for info. tech.]
④ dean	④ dean

51. Is your chief academic officer directly involved (or interested) in campus planning for instructional technology?
① not interested or involved ② interested ③ somewhat involved ④ directly involved

52. How does your institution deal with the "life cycle" issues affecting the institutional purchase (and upgrading/replacement) of desktop computers for faculty, classrooms, clusters, and labs?
① Most institutional purchases of desktop systems are acquired through a special one-time allocation or appropriation.
② Although we generally purchase equipment on a one-time allocation, we are developing a budget mechanism (or budget planning model) to help us routinely "acquire and retire" new technology.
③ We have a budget mechanism (or budget planning model) to help us routinely "acquire and retire" new technology.

53. From your perspective, how well does your institution prepare your students (i.e., undergraduates) for the technology skills they will need and technology challenges they will encounter over the next decade?

Academic Field/Program	*Poor*				*Excellent*
biological & physical sciences	①	②	③	④	⑤
business	①	②	③	④	⑤
education	①	②	③	④	⑤
engineering	①	②	③	④	⑤
fine & performing arts	①	②	③	④	⑤
humanities	①	②	③	④	⑤
social science	①	②	③	④	⑤

54. From your perspective, how well prepared are the faculty at your institution to use technology as a resource for instruction and scholarship?

For Instruction	*Poor*				*Excellent*
biological & physical sciences	①	②	③	④	⑤
business	①	②	③	④	⑤
education	①	②	③	④	⑤
engineering	①	②	③	④	⑤
fine & performing arts	①	②	③	④	⑤
humanities	①	②	③	④	⑤
social science	①	②	③	④	⑤

For Scholarship	*Poor*				*Excellent*
biological & physical sciences	①	②	③	④	⑤
business	①	②	③	④	⑤
education	①	②	③	④	⑤
engineering	①	②	③	④	⑤
fine & performing arts	①	②	③	④	⑤
humanities	①	②	③	④	⑤
social science	①	②	③	④	⑤

L. EFFECTS OF COMPUTER TECHNOLOGY

55. Please indicate the degree to which you agree or disagree with the following statements.
Ratings: ① Strongly Disagree (SD) ② Disagree ③ Agree ④ Strongly Agree (SA)

	SD	D	A	SA
Faculty here believe technology can enhance their classes and student learning	①	②	③	④
Faculty have unreasonable expectations about user support services	①	②	③	④
My president has serious questions about the amount of money we are spending to support computing and information technology	①	②	③	④
Technology has done much to enhance instruction but has not made the faculty more productive	①	②	③	④

please go on to the next page ➨

M. CURRENT MICROCOMPUTER AND DESKTOP COMPUTER FACILITIES

56. What was the total *headcount* enrollment on your campus Spring 1993? |_|_|_|_|_|

57. What is your *best estimate* of the total number of *institutionally-owned* desktop computers and workstations on your campus as of May, 1993? (Please include systems in faculty offices and in labs, clusters, classrooms, residence halls, etc.) Microcomputers |_|_|_|_|_| Unix Workstations |_|_|_|_|_|

58. What is your best estimate of the total number of *personally-owned* desktop computers used on your campus as of May, 1993? (Include personally purchased systems owned by students and faculty.) |_|_|_|_|_|

59. What is your best estimate of the proportion of individuals in your campus community who have or own desktop computers?

students	|_|_| %
faculty	|_|_| %
administrators/staff	|_|_| %

60. Estimated total number of desktop units purchased by:

	1992-93	1993-94
students	|_|_|_|_|	|_|_|_|_|
faculty (personal & office/project use)	|_|_|_|_|	|_|_|_|_|
administrators/staff (personal & office/project use)	|_|_|_|_|	|_|_|_|_|
campus labs, clusters & other instructional use	|_|_|_|_|	|_|_|_|_|

61. Total number of *desktop computer labs, clusters,* and *classrooms* on your campus as of May 1993? |_|_|_|

62. How many of these computer labs/clusters/classrooms are specifically dedicated for use by individual departments or units (e.g., writing program, engineering, social science)? |_|_|_|

63. Total number of *microcomputers and workstations* in *all* the labs/classrooms/clusters on your campus as of May, 1993? Microcomputers |_|_|_|_|_| Unix Workstations |_|_|_|_|_|

64. Is there a specific charge *to students* for use of the labs? (Please mark all that apply.)
- ❑ no
- ❑ yes, included in student fees
- ❑ yes, included in course fees
- ❑ yes, hourly rates
- ❑ yes, for printing

65. Who may reserve lab facilities? (Please mark all that apply.)
- ❑ no reservation policy
- ❑ labs may not be reserved (permanent open-access facilities)
- ❑ individual students for their own work
- ❑ groups of students for special projects
- ❑ faculty for classes or seminars
- ❑ off-campus groups for special seminars

THANK YOU FOR YOUR ASSISTANCE!

PLEASE FOLD AND MAIL IN THE ENCLOSED POSTAGE-PAID ENVELOPE

Appendix C

Participating Institutions

Abilene Christian University, TX
Adirondack Community College, NY
Alabama Agricultural & Mechanical Univ., AL
Alabama Southern Community college, AL
Alamance Community College, NC
Albertus Magnus College, CT
Albion College, MI
Albuquerque Technical Vocational Institute, NM
Alfred University, NY
Allegany Community College, MD
Allen County Community College, KS
Allentown College of St. Francis de Sales, PA
Alma College, MI
Alpena Community College, MI
Alvernia College, PA
Alverno College, WI
Amarillo College, TX
Amber University, TX
American University, DC
Ancilla College, IN
Anderson University, IN
Angelina College, TX
Anson Community College, NC
Antelope Valley College, CA
Appalachian State University, NC
Arapahoe Community College, CO
Arizona State University, AZ
Arizona Western College, AZ
Arkansas State University, AR
Arkansas Tech University, AR
Asbury College, KY
Asheville-Buncombe Technical Community College, NC
Ashland University, OH
Atlantic Christian College, NC
Atlantic Community College, NJ
Atlantic Union College, MA
Augsburg College, MN
Augustana College, IL
Augustana College, SD
Aurora University, IL
Austin Community College, MN
Averett College, VA
Avila College, MO
Babson College, MA
Bacone College, OK
Bainbridge College, GA
Baker College, MI
Bakersfield College, CA
Baldwin-Wallace College, OH
Bard College, NY
Barstow College, CA
Bartlesville Wesleyan College, OK
Barton County Community College, KS
Bay de Noc Community College, MI
Beaufort County Community College, NC
Beaver College, PA
Becker Junior College-Leicester Campus, MA
Becker Junior College-Worcester Campus, MA
Bellarmine College, KY
Belleville Area College, IL
Belmont Abbey College, NC
Belmont Technical College, OH
Beloit College, WI
Bemidji State University, MN
Benedictine College, KS
Berea College, KY
Bergen Community College, NJ
Berkshire Community College, MA
Bethany College, KS
Bethany Lutheran College, MN
Bethel College, MN
Birmingham Southern College, AL
Black Hills State University, SD
Blackburn College, IL
Blinn College, TX
Bloomfield College, NJ
Bloomsburg University of Pennsylvania, PA
Blue Ridge Community College, VA
Bluefield State College, WV
Bluffton College, OH
Boise State University, ID
Boston University, MA
Bowling Green State University, OH
Bradley University, IL
Brazosport College, TX
Brescia College, KY
Brevard College, NC
Bristol Community College, MA
Brookdale Community College, NJ
Broome Community College, NY
Brown University, RI
Brunswick College, GA
Brunswick Community College, NC
Bryn Mawr College, PA
Bucknell University, PA
Butler County Community College, KS
Caldwell College, NJ
Caldwell Community College and Technical Institute, NC
Calif State Univ-Los Angeles, CA
California Baptist College, CA
California Institute of Technology, CA
California Institute of the Arts, CA
California Lutheran University, CA
California Maritime Academy, CA

California State Polytechnic University Pomona, CA
California Univ. of Pennsylvania, PA
Calumet College of Saint Joseph, IN
Campbellsville College, KY
Canisius College, NY
Carnegie Mellon University, PA
Carteret Community College, NC
Carthage College, WI
Case Western Reserve University, OH
Casper College, WY
Castleton State College, VT
Catawba College, NC
Catawba Valley Community College, NC
Cayuga County Community College, NY
Cazenovia College, NY
Cedar Crest College, PA
Centenary College of Louisiana, LA
Central Alabama Community College-Childersburg Campus, AL
Central Arizona College, AZ
Central Community College-Platte Campus, NE
Central Connecticut State University, CT
Central Methodist College, MO
Central Piedmont Community College, NC
Central University of Iowa, IA
Central Wesleyan College, SC
Cerro Coso Community College, CA
Chabot College, CA
Chadron State College, NE
Charles County Community College, MD
Chatham College, PA
Chattanooga State Technical Community College, TN
Chestnut Hill College, PA
Chicago State University, IL
Chipola Junior College, FL
Christendom College, VA
Cisco Junior College, TX
City College of San Francisco, CA
City Colleges of Chicago, Harry S Truman College, IL
City Colleges of Chicago, Wilbur Wright College, IL
Claflin College, SC
Clark State Community College, OH
Clarkson University, NY
Clatsop Community College, OR
Clayton State College, GA
Cleveland Community College, NC
Cleveland State University, OH
Cloud County Community College, KS
Clovis Community College, NM
Coastal Carolina Community College, NC
Coastline Community College, CA
Cochise College, AZ
Coffeyville Community College, KS
Cogswell College North, WA
Cogswell Polytechnical College, CA
Coker College, SC
Colby Community College, KS
Colby-Sawyer College, NH
College Misericordia, PA
College of Charleston, SC
College of Mount Saint Vincent, NY
College of Mount St. Joseph, OH
College of Notre Dame of Maryland, MD
College of Santa Fe, NM
College of Southern Idaho, ID
College of St. Catherine, MN
College of St. Scholastica, MN
College of St. Thomas, MN
College of Staten Island of the City University of New York, NY
College of the Atlantic, ME
College of the Canyons, CA
College of The Holy Cross, MA
College of the Ozarks, MO
College of Wooster, OH
Colorado Mountain College, Alpine Campus, CO
Colorado Northwestern Community College, CO
Columbia College, IL
Columbia College, CA
Columbia State Community College, TN
Columbus College, GA
Community College of Allegheny County College Center-North, PA
Community College of Allegheny County South Campus, PA
Community College of Beaver County, PA
Community College of Rhode Island, RI
Community College of the Finger Lakes, NY
Concordia College, IL
Concordia College, MN
Concordia College, NY
Concordia College, OR
Concordia College, AL
Concordia Lutheran College, TX
Connors State College, OK
Converse College, SC
Copiah-Lincoln Community College, MS
Corning Community College, NY
Corpus Christi State University, TX
Cosumnes River College, CA
County College of Morris, NJ
Covenant College, GA
Crafton Hills College, CA
Craven Community College, NC
Creighton University, NE
Crowder College, MO
Cuesta College, CA
Cumberland College, KY
Cumberland County College, NJ
Cumberland University, TN
CUNY - Hunter College , NY
CUNY - Manhattan Community College , NY
Cuyahoga Community College, OH
Cuyahoga Community College, Western Campus, OH
Cypress College, CA
D'Youville College, NY
Dakota State University, SD
Dalton College, GA
Daniel Webster College, NH
Danville Area Community College, IL
Danville Community College, VA
Darton College, GA
Davidson College, NC
Davidson County Community College, NC
Davis & Elkins College, WV
Dawson Community College, MT
Daytona Beach Community College, FL
De Anza College, CA
Defiance College, OH
DeKalb College, GA
Delaware Technical and Community College, Southern Campus, DE
Delaware Technical and Community College,Terry Campus, DE

Delaware Valley College, PA
Delgado Community College, LA
Denison University, OH
Denver Institute of Technology, CO
DePauw University, IN
DeVry Institute of Technology, TX
Doane College, NE
Dordt College, IA
Drew University, NJ
Duquesne University, PA
Dutchess Community College, NY
Earlham College, IN
East Central Junior College, MS
East Georgia College, GA
East Tennessee State University, TN
East-West University, IL
Eastern College, PA
Eastern Mennonite College, VA
Eastern Michigan University, MI
Eastern Montana College, MT
Eastern New Mexico University- Roswell, NM
Eastern Wyoming College, WY
Eastfield College, TX
Eckerd College, FL
Edgecombe Community College, NC
Edinboro University of Pennsylvania, PA
Edison State Community College, OH
Elizabethtown College, PA
Ellsworth Community College, IA
Elmira College, NY
Elon College, NC
Embry-Riddle Aeronautical University, AZ
Emmanuel College, GA
Everett Community College, WA
Evergreen State College, WA
Fairmont State College, WV
Ferris State University, MI
Ferrum College, VA
Flagler College, FL
Florence-Darlington Technical College, SC
Florida Institute of Technology, FL
Florida Keys Community College, FL
Florida Memorial College, FL
Florida State University, FL
Floyd College, GA
Fontbonne College, MO
Fordham University, NY
Forsyth Technical Community College, NC
Forsyth Technical Community College, NC
Fort Hays State University, KS
Fort Lewis College, CO
Fort Scott Community College, KS
Fox Valley Technical College, WI
Francis Marion College, SC
Franklin College of Indiana, IN
Franklin Pierce College, NH
Frederick Community College, MD
Free Will Baptist Bible College, TN
Freed-Hardeman College, TN
Fresno City College, CA
Front Range Community College, CO
Frostburg State University, MD
Fugazzi College, KY
Fulton-Montgomery Community College, NY
Galveston College, TX
Garrett Community College, MD
Gaston College, NC
Gateway Technical College, WI
Gavilan College, CA
Genesee Community College, NY
Geneva College, PA
George Washington University, DC
Georgetown College, KY
Gogebic Community College, MI
Gonzaga University, WA
Gordon College, MA
Goshen College, IN
Governors State University, IL
Grace College, IN
Grand Canyon University, AZ
Grays Harbor College, WA
Green Mountain College, VT
Grove City College, PA
Guilford College, NC
Gulf Coast Community College, FL
Gustavus Adolphus College, MN
Gwynedd-Mercy College, PA
Hagerstown Junior College, MD
Hamilton College, NY
Hampden-Sydney College, VA
Hardin-Simmons University, TX
Harding University, AR
Harford Community College, MD
Harris-Stowe State College, MO
Harrisburg Area Community College, PA
Harvey Mudd College, CA
Haverford College, PA
Hawaii Pacific College, HI
Hawkeye Institute of Technology, IA
Haywood Community College, NC
Henderson State University, AR
Henry Ford Community College, MI
Herkimer County Community College, NY
Hesston College, KS
Hilbert College, NY
Hill College of the Hill Junior College District, TX
Hobart and William Smith College, NY
Hofstra University, NY
Hollins College, VA
Holy Family College, PA
Holy Names College, CA
Hood College , MD
Hope College, MI
Horry-Georgetown Technical College, SC
Houghton College, NY
Housatonic Community College, CT
Howard Community College, MD
Huntington College, IN
Hutchinson Community College, KS
Illinois Benedictine College, IL
Illinois Valley Community College, IL
Immaculata College, PA
Indian Hills Community College, IA
Indian River Community College, FL
Indiana Institute of Technology, IN
Indiana State University, IN
Indiana U-Purdue U at Indianapolis, IN
Indiana University East, IN
Indiana University Northwest, IN
Indiana University of Pennsylvania, PA

Indiana University Southeast, IN
Indiana University-Purdue University at Fort Wayne, IN
Indiana Vocational Technical College-Central Indiana, IN
Indiana Vocational Technical College-Kokomo, IN
Indiana Vocational Technical College-Lafayette, IN
Indiana Vocational Technical College-North, IN
Indiana Wesleyan University, IN
Iona College, NY
Iowa Central Community College, IA
Iowa State Univ of Science & Tech, IA
Iowa Wesleyan College, IA
Irvine Valley College, CA
Isothermal Community College, NC
ITT Technical Institute, CA
IvyTech-Indiana's Technical College, IN
J. Sargeant Reynolds Community College, VA
Jackson Community College, MI
Jackson State University, MS
James Madison University, VA
James Sprunt Community College, NC
Jamestown Community College, NY
Jarvis Christian College, TX
Jefferson College, MO
Jefferson Community College, NY
John A. Logan College, IL
John Brown University, AR
John C. Calhoun State Community College, AL
John M. Patterson State Technical College, AL
Johnson State College, VT
Joliet Junior College, IL
Jordan College, MI
Judson College, AL
Judson College, IL
Kalamazoo College, MI
Kankakee Community College, IL
Kaskaskia College, IL
Keene State College, NH
Kellogg Community College, MI
Kendall College of Art and Design, MI
Kenyon College, OH
Keuka College, NY
Keystone Junior College, PA
Kilian Community College, SD
Kirkwood Community College, IA
Kishwaukee College, IL
Knox College, IL
La Roche College, PA
La Salle University, PA
Lafayette College, PA
LaGrange College, GA
Lake Michigan College, MI
Lake Superior State University, MI
Lakeland College, WI
Lakeshore Technical College, WI
Lamar University, TX
Lander College, SC
Lane Community College, OR
Laredo Junior College, TX
Lawrence Institute of Technology, MI
Lee College, TX
Lees-McRae College, NC
Lenoir Community College, NC
Lenoir-Rhyne College, NC
LeTourneau University, TX
Lewis University, IL
Lewis-Clark State College, ID
Livingstone College, NC
Lock Haven Univ. of Pennsylvania, PA
Long Island University, C. W. Post Campus, NY
Los Angeles Harbor College, CA
Louisiana State University at Alexandria, LA
Louisiana State University at Eunice, LA
Lower Columbia College, WA
Lycoming College, PA
Lyndon State College, VT
Macalester College, MN
MacMurray College, IL
Macomb Community College, MI
Macon College, GA
Manatee Community College, FL
Manchester College, IN
Manchester Community College, CT
Manhattan College, NY
Mansfield University of Pennsylvania, PA
Maple Woods Community College, MO
Marian College, IN
Marion Military Institute, AL
Marist College, NY
Marlboro College, VT
Mars Hill College, NC
Marshalltown Community College, IA
Martin Center College, IN
Martin Methodist College, TN
Mary Washington College, VA
Marygrove College, MI
Marylhurst College, OR
Marymount University, VA
Marywood College, PA
Massasoit Community College, MA
Master's College, CA
Mater Dei College, NY
Mattatuck Community College, CT
McCook Community College, NE
McKendree College, IL
McLennan Community College, TX
Memphis State University, TN
Mendocino College, CA
Mercer University, GA
Mercer University Atlanta, GA
Mercy College, NY
Mercyhurst College, PA
Meredith College, NC
Merrimack College, MA
Messiah College, PA
Metropolitan State College, CO
Michigan Technological University, MI
Middle Georgia College, GA
Middle Tennessee State University, TN
Middlebury College, VT
Middlesex County College, NJ
Midlands Technical College, SC
Midway College, KY
Midwestern State University, TX
Millersville University of Pennsylvania, PA
Milligan College, TN
Millsaps College, MS
Minneapolis Community College, MN
Minot State University, ND
Mississippi College, MS
Mississippi Delta Junior College, MS

Mississippi Gulf Coast Community College, Jackson County Campus, MS
Mississippi Gulf Coast Community College, Perkinston Campus, MS
Missouri Baptist College, MO
Missouri Southern State College, MO
Mitchell College, CT
Mitchell Community College, NC
Moberly Area Community College, MO
Mohave Community College, AZ
Molloy College, NY
Monmouth College, IL
Montana College of Mineral Science and Technology, MT
Montana State University, MT
Montcalm Community College, MI
Montclair State College, NJ
Montgomery College-Takoma Park Campus, MD
Montgomery Community College, NC
Moorpark College, CA
Moraine Valley Community College, IL
Moravian College, PA
Morningside College, IA
Morris College, SC
Morton College, IL
Mount Ida College, MA
Mount Marty College, SD
Mount Mary College, WI
Mount Olive College, NC
Mount Union College, OH
Mount Wachusett Community College, MA
Mt. Hood Community College, OR
Mt. San Antonio College, CA
Mt. San Jacinto College, CA
Muskingum College, OH
Nash Community College, NC
Nashville State Technical Institute, TN
Nassau Community College, NY
Nebraska College of Business, NE
Nebraska College of Technical Agriculture, NE
Nebraska College of Technical Agriculture, NE
New England Institute of Technology, FL
New Hampshire College, NH
New Hampshire Vocational-Technical College, NH
New Jersey Institute of Technology, NJ
New Mexico State Univ-Main Campus, NM
New Mexico State University- Carlsbad, NM
Newbury College, MA
North Adams State College, MA
North Carolina A & T State Univ., NC
North Carolina State University, NC
North Carolina Wesleyan College, NC
North Dakota State University- Bottineau Branch and Institute of Forestry, ND
North Greenville College, SC
North Harris County College District, TX
North Hennepin Community College, MN
North Iowa Area Community College, IA
Northampton County Area Community College, PA
Northcentral Technical College, WI
Northeast Alabama State Junior College, AL
Northeast Iowa Technical Institute-Peosta Campus, IA
Northeast Mississippi Community College, MS
Northeast Missouri State University, MO
Northeastern Junior College, CO
Northern Arizona University, AZ
Northern Kentucky University, KY
Northern Michigan University, MI
Northern Montana College , MT
Northwest College of the Assemblies of God, WA
Northwest Community College, WY
Northwest Iowa Copmmunity College, IA
Northwest Nazarene College, ID
Northwestern Business College, IL
Northwestern College, WI
Northwestern Electronics Institute, MN
Northwestern Michigan College, MI
Northwestern University, IL
Norwalk Community College, CT
Notre Dame College of Ohio, OH
Oakland University, MI
Oakton Community College, IL
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Ohio Northern University, OH
Ohio State University-Mansfield Campus, OH
Ohio University-Chillicothe, OH
Ohio University-Eastern Campus, OH
Oklahoma Baptist University, OK
Oklahoma City Community College, OK
Oklahoma State University, OK
Old Dominion University, VA
Olivet Nazarene University, IL
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Oregon State University, OR
Otero Junior College, CO
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Our Lady of the Lake University, TX
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Pacific Lutheran University, WA
Pacific Oaks College, CA
Pacific Union College, CA
Pacific University, OR
Palo Alto College, TX
Palomar College, CA
Pan American University, TX
Paris Junior College, TX
Parks Junior College, CO
Pasadena City College, CA
Pasco-Hernando Community College, FL
Passaic County Community College, NJ
Pellissippi State Technical Community College, TN
Penn Valley Community College, MO
Pennsylvania College of Technology, PA
Pennsylvania State Univ. at Erie, , PA
Pennsylvania State Univ. at Harrisburg, PA
Pennsylvania State Univ., Univ. Park Campus, PA
Pennsylvania State University Altoona Campus, PA
Pennsylvania State University Hazelton Campus, PA
Pennsylvania State University Wilkes-Barre Campus, PA
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Pennsylvania State University York Campus, PA
Piedmont Community College, NC
Piedmont Technical College, SC
Pikeville College, KY
Pittsburg State University, KS
Plymouth State College, NH

Polk Community College, FL
Polytechnic University, Brooklyn Campus, NY
Pratt Institute, NY
Presbyterian College, SC
Purdue University Calumet, IN
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Quincy College, MA
Quinebaug Valley Community College, CT
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Rancho Santiago College, CA
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Reed College, OR
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Saint Mary's College, NC
Saint Mary's College of Minnesota, MN
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Seattle Pacific University, WA
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Seton Hall University, NJ
Shawnee State University, OH
Shepherd College, WV
Sheridan College, WY
Shimer College, IL
Shippensburg University of Pennsylvania, PA
Shoreline Community College, WA
Siena College, NY
Silver Lake College, WI
Simon's Rock of Bard College, MA
Simpson College, IA
Sinclair Community College, OH
Sioux Falls College, SD
Skagit Valley College, WA
Skidmore College, NY
Slippery Rock University of Pennsylvania, PA
Snead State Junior College, AL
South College, GA
South Georgia College, GA
South Plains College, TX
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South Suburban College, IL
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Southeast Community College, Milford Campus, NE
Southeast Missouri State University, MO
Southeastern Baptist Theological Seminary, NC
Southeastern Community College, South Campus, IA
Southeastern Illinois College, IL
Southeastern Louisiana University, LA
Southern Arkansas University, AR
Southern Arkansas University Tech, AR
Southern California College, CA
Southern College, FL
Southern College of Technology, GA
Southern Connecticut State University, CT
Southern Illinois Univ-Carbondale, IL
Southern Nazarene University, OK
Southern State Community College, OH
Southwest Missouri State University, MO
Southwest Texas State University, TX
Southwestern Adventist College, TX
Southwestern Baptist Theological Seminary, TX
Southwestern College, CA
Southwestern Community College, IA
Southwestern Michigan College, MI
Southwestern Oklahoma State University, OK
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Texas Lutheran College, TX
Texas Southern University, TX
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Trinity College, IL
Trinity College, CT
Trinity University, TX
Troy State University at Dothan, AL
Troy State University in Montgomery, AL
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Tulsa Junior College, OK
Ulster County Community College, NY
Umpqua Community College, OR
Union County College, NJ
United States Coast Guard Academy, CT
United States Military Academy, NY
United States Naval Academy, MD
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University of Wisconsin Center- Richland, WI
University of Wisconsin Center- Rock County, WI
University of Wisconsin Center- Sheboygan County, WI
University of Wisconsin Center- Sheboygan County, WI
University of Wisconsin Center- Washington County, WI
University of Wisconsin Center- Waukesha County, WI
University of Wisconsin-Eau Claire, WI
University of Wisconsin-Green Bay, WI
University of Wisconsin-La Crosse, WI
University of Wisconsin-Milwaukee, WI
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Virginia Wesleyan College, VA
Wagner College, NY
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Wake Technical Community College, NC
Waldorf College, IA
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Warren Wilson College, NC
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Washington and Jefferson College, PA
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Webber College, FL
Weber State College, UT
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Westbrook College, ME
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Western Kentucky University, KY
Western Maryland College, MD
Western New England College, MA
Western Oklahoma State College, OK
Western Oregon State College, OR
Western Piedmont Community College, NC
Western State College of Colorado, CO
Western Texas College, TX
Western Wisconsin Technical College, WI
Westfield State College, MA
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Westminster College, MO
Westminster College, PA
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Whittier College, CA
Willamette University, OR
William Jennings Bryan College, TN
William Jewell College, MO
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Williams College, MA
Wilmington College, OH
Winthrop University, SC
Wisconsin Lutheran College, WI
Wofford College, SC
Wood Junior College, MS
Woodbury University, CA
Worcester Polytechnic Institute, MA
Worcester State College, MA
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